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THE AMERICAN FARMER.

"O FORTUNATOS NIMIUM SUA SI BONA NORINT
"AGRICOLAS." Virg.

PUBLISHED BY SAML. SANDS & SON, BALTIMORE, MD.

VOL. VII.—No. 3.]

MARCH, 1878.

[NEW SERIES.]

Phosphates.

At a late meeting of the Elmira (N. Y.) Club, Prof. G. C. Caldwell, of Cornell University, delivered an address, which is published in the *Husbandman*, upon this all-engrossing subject at this time to the intelligent agriculturists of the United States. Its length prevents our publishing it entire, but we will give some prominent points which will be of interest to our readers. The Professor remarked that, in a lecture which he had before delivered on lime, he called special attention to the constancy of the occurrence of lime in plants—and he adds:

"The statement that I made there, in regard to that point, holds good, as well, in regard to phosphoric acid, or the phosphates. The thousands of analyses that have been made of the ash of plants, or that part left behind when the plant is burned, show that phosphate is always present, no matter what may have been the conditions under which the plant grew, whether in water, or in marshes, or on dry land; whether in soil rich or poor in phosphates. We may take the plant in any stage of its growth, from the most immature to the ripest, and it may take any part of the plant, or any special organ, even down to the petals or stamens of the flowers, and never fail to find phosphates.

In regard to the proportion of phosphoric acid in the crops that we ordinarily cultivate, no plant or part of a plant is so rich in phosphoric acid as the seeds of wheat and rye, where we find in the ash an average of forty-six per cent.; next to these comes Indian corn, containing about forty-one per cent. of phosphoric acid in its ash; then barley, with thirty-four per cent., oats with twenty-two per cent., potatoes with twenty, the sugar beet with fifteen, turnips thirteen, mangolds and clover eight per cent., and timothy with about seven per cent. But the proportion of phosphoric acid in the ash of these plants possesses less interest for us than the actual quantity of the acid required by an average crop. How much does a fair crop of

wheat, barley or Indian corn carry away from our soils in straw and grain, or a crop of clover or timothy hay, or of potatoes, mangolds or turnips? And how much is exported from the farm in the crops ordinarily sold?

The following statement will tell us how much should be brought back to the farm, in the shape either of purchased fodder or else of purchased manure, to make good the draft upon the soil and to prevent it from losing in fertility:

	Average crop.		Pounds of
	Bush.	Wt.	Phosphoric Acid.
Wheat.			
Grain.....	25	1,500 lbs.	12
Straw.....		2,500 "	6
Indian corn.			
Grain.....	50	3,000 "	31
Stover		6,000 "	20
Potatoes.....	150	9,000 "	20
Turnips.....		40,000 "	42
Tops.....		75,000 "	99
Mangolds.....		40,000 "	31
Tops, about the same as turnips.			
Clover (two cuts).....		5,000 "	25
Timothy.....		3,000 "	14

From these figures it would appear that, in any case, whatever we may sell off the farm, the quantity of phosphoric acid removed will be very small in comparison with the stock in the soil, even if we start with the only average proportion of three thousand five hundred pounds per acre, or ten parts in ten thousand. A crop of turnips, which takes up a larger quantity of the acid per acre than any of the other crops mentioned in the above table, would carry off in the roots only forty-two pounds, or about one-ninetieth of the whole quantity; a crop of potatoes, only twenty pounds, one one-hundred-and-seventy-fifth of the whole; a crop of corn, about one one-hundred-and-tenth, and a crop of wheat only one three-hundredth. But in the best systems of farming, all these products are not sold; the roots and hay, and in some cases the corn, are fed to the stock, and nothing but wheat and other cereal grains, milk, or the products of its manufacture into butter and cheese, and meat are sold; and in many cases potatoes also. But in all these products there is comparatively little phosphoric acid. With the acre's yield of wheat only twelve pounds of phosphoric acid leave the farm, and with the potatoes only twenty pounds.

Sales of corn remove this acid from the farm almost three times as fast as sales of wheat, and one-third faster than the sale of potatoes. Taking the annual yield of the cow to be two thousand five hundred pounds of milk, if it is all sold, only about six pounds of phosphoric acid would be exported, and this quantity of acid would probably be taken from not less than two acres of land, required for the support of the cow. According to the estimate of Mr. Lawes, for every thousand pounds of live weight of beef animals raised on the farm, fattened and sold, about sixteen pounds only of phosphoric acid will be exported; this quantity, distributed through the whole number of years from the birth of the animal to its sale, will amount to a very small draft per annum per acre—certainly not over two pounds. The meaning of all these figures is simply this, that if only wheat, milk and fattened animals are sold off the farm, and if wheat does not come too often in the rotation, the stock of phosphoric acid in the soil is not drawn upon to an extent greater than from two to three pounds for each acre per year, or less than a hundredth of the average quantity in a good soil. This is slow exhaustion, but, after all, it is sure, and even such careful husbandry as this cannot be practiced, if but for half a century, without making a serious inroad on the native stores of plant food. On how many of our farms, however, is such careful husbandry practiced—to say nothing of the reckless waste of manures? In making these estimates I have assumed that everything that is not sold goes back to the farm again in manure. What quantities of corn and hay are carried from the country to the city—both of them crops that remove large quantities of phosphoric acid, fifteen, twenty-five or thirty pounds per acre, instead of only two or three, as in wheat, milk and fat animals. In respect to the waste of manures, fortunately, phosphoric acid is not easily lost in this way. It is not volatile, and so it cannot escape into the atmosphere as the ammonia can; but if the manure pile is frequently drenched with water, as is only too often the case, the phosphate may be leached out and carried into the ground under the pile, far beyond the reach of the farmer's spade. In one instance, where an excavation was made under a manure pile from seventy head of cattle, it was found that the earth was colored blue by phosphate of iron from phosphoric acid that had been leached out of the pile; and it was estimated from the analysis of this product, that there were under the manure pile at least six thousand pounds of phosphoric acid, worth at least five times as much as an equal quantity of phosphoric acid in the field, because soluble in water. The phosphoric acid in the field, especially of a soil that has been long under cultivation, is mostly insoluble; this that was found under the manure pile must have been soluble originally or it would not have been leached out by the water that soaked through the manure.

If there were time for it, I might show that lime and potash, ingredients of the food of plants, that are always present in the plant, and in the case of the latter especially, in quite large and uniform proportions in some parts of the plant, are exported in much smaller quantities than the

phosphoric acid, in the plants ordinarily sold. Phosphoric acid appears to be the ingredient of plant food above all others that we have been carrying off from the soil of our farms in the course of the fifty years or more that we have been cultivating them, and it is only within the last few years that we have given any thought to replacing the loss. In England, where the soil has been under cultivation for a much longer period, they began to feel the deficiency of phosphates many years ago, and we are now beginning to follow in their track. In Morton's Cyclopædia of Agriculture we are told how the farmers of England began long ago to be discouraged. Their soils had been steadily deteriorating for many years, under somewhat the same wasteful system of cultivation, evidently, that has been so largely followed in this country, especially in the west. A point was reached where, whatever system the farmer followed, his crops were steadily diminishing; in some places the condition of things was so bad that wheat was not included at all in the rotation. It was the introduction of bone manure, just at this point, that saved the agriculture of England, and entirely changed the aspect of affairs.

Superphosphates.

The Professor describes the different phosphates which are used in the manufacture of super-phosphates, and adds:

In reports of analyses of phosphates, the terms soluble, reverted and insoluble *phosphoric acid* are commonly used, instead of soluble, reverted and insoluble *phosphate*. It is hardly necessary to add that the larger the proportion of soluble acid a super-phosphate contains, the more valuable it is. In regard to the relative value of the three conditions of the acid, soluble, reverted and insoluble, there is some variety of opinion among chemists; for the values are hard to fix with any degree of accuracy, but reverted acid is generally considered to be worth from two to three times, and soluble acid from three to four times as much as the insoluble acid, such as we find it in mineral phosphates; and chemists are also generally agreed in giving to soluble acid the value of from twelve to twelve and a half cents a pound. My own opinion is, that it would be more correct to call insoluble acid worth only one-sixth as much as the soluble, or two cents a pound. Most of the experiments that have been performed with a view to utilize the ground mineral phosphate at once as a manure, without first converting it into super-phosphate, or, in other words, first converting at least a part of its insoluble acid into soluble acid, have yielded such unfavorable results as to justify us, it seems to me, in setting such a low estimate on the value of the insoluble acid in such phosphates. In bone meal the insoluble phosphate is worth more than in mineral phosphates—the South Carolina mineral, for instance—because it is accompanied by other substances that bring about its solution more readily. The bone meal will putrefy, or decay, wherever it is put, whether in the pile of rotting manure or in the field, and as it decays, its phosphoric acid becomes soluble to a great extent, while the mineral phosphate suffers no such change.

Super-phosphates are made, as all know, by the action of oil of vitriol on the tri-calcic phosphate, which is partially converted into the mono-calcic phosphate. The tri-calcic phosphate may be in the form of bones, or of bone-black, or of South Carolina phosphate. The product is the same in all cases, except that when bone, or bone-black, is used, it contains some nitrogen. *Plain* super-phosphates are those that do not contain nitrogen. Nitrogen, in soluble forms of combination, such as ammonia salts or nitrates, is generally estimated to be worth almost, if not quite, twice as much as soluble phosphoric acid; but the condition of the nitrogen, in super-phosphates containing it, is very uncertain. Sometimes, doubtless, it is in the form of these soluble and valuable compounds, but oftener in the shape of dried animal refuse, or fish guano, where it is not worth over one-half more than soluble phosphoric acid, or about eighteen cents a pound.

Home-made Superphosphates.

The advantages and disadvantages of making superphosphates on the farm, are thus discussed by the Professor:

Many inquiries have been made and many and various opinions expressed in regard to the home manufacture of superphosphate. It is argued in its favor that a purer article will be obtained at a lower cost, and that the farmer may be sure that he is not the victim of fraud and adulteration. Some few farmers have for many years made their own superphosphate, and they have much to say in favor of the practice. While I am willing to allow that there are a few among the many farmers who can execute this operation successfully and profitably, I must say that I cannot recommend it in general. It is, in the first place, attended with some danger, in the handling of the heavy carboys, or large glass vessels, in which the oil of vitriol is received; one serious accident with that substance would sadly mar the profits of many successful ventures in the manufacture. The acid is very corrosive, and might make terrible havoc with any part of the body with which it should come in contact. In the second place, bone meal must be used in order to be sure of good results. It is not easy to reduce whole or simply broken bones by acid; and bone meal can be adulterated as well as the superphosphate, though perhaps not quite so easily. Hence, one of these supposed advantages of home manufacture may be no advantage at all, for the product may contain no more super-phosphate than an adulterated article of super-phosphate from the regular manufacturer. In the third place, the manufacturer can get his raw materials, or at least a part of them, much cheaper than the farmer can, so that there is good reason to doubt whether there is any profit in home manufacture, provided that there are reasonably fair facilities for getting a good article from responsible dealers. If you can get bones cheaply in your neighborhood, better reduce them by lime and ashes, or in the compost heap, than to resort to the use of oil of vitriol. I think it is plain that within these years there has been an improvement in the quality of fertilizers; and this improvement has come only because the farmers have learned that they can have a better article if demanded.

[For the American Farmer.]

On the Culture of Tobacco,—No. II.

Labor-Saving in the Culture of Tobacco, &c.

To demonstrate the advantages of the plan which I, together with some others, have adopted, for labor-saving in the culture of tobacco, it must be contrasted with antecedent customs, when all tobacco land was hilled before being planted. This method I suppose had its origin with the first growers of tobacco in this country, when the land was being cleared, and the stumps, roots, &c., prevented thorough preparation by the plow. For such land, and only for such, it is still doubtless the most effective method of preparation. There are some advantages in having tobacco plants slightly elevated, to prevent their being covered and killed, when small, by hasty and excessive rains. But these can be secured more cheaply and more easily by bedding with the plow than by hilling with the hoe. It is of the first importance to plow, harrow and thoroughly refine the land,—otherwise the clods will be turned by the plow when bedding into the bed, and cannot be removed even by the hilling process without extra work, which the present laborers will not faithfully perform; and by the neglect of which I have seen the growth of tobacco on rich land retarded, and light and inferior crops made which yielded no profit. Our springs of late years being backward, and our summers dry and shorter, the planter should do, if possible, everything necessary to accelerate the growth and hasten the early maturity of his crop, by which an advantage is secured in both quantity and quality.

Before the war, not being owner I was of necessity the hirer of all the labor I employed. This necessity induced a vigilant eye to expenditures, and the abatement of all unnecessary labor. The heaviest item remitted in the cultivation of tobacco, was hilling the land. Dispensing with this I found to be equivalent to the saving of 8 days labor for 5 hands at hilling time, and 6 days labor for 5 hands to cut off the hills at planting time, for a crop of 100,000 plants. The average yield of my land, during the period of the hilling process, was 5 to 6 plants to the pound. Under my present system, 3½ plants to the pound. I do not attribute this gain alone to planting in beds instead of hills, but in part to this, and more to better manured, fertilized and prepared soil.

Before plowing my land for tobacco the first time, I apply broadcast all the manure I can raise. In order to do this in time I sometimes begin in the fall, and continue to haul out and plow in, so that the manure may have time to decompose and become incorporated with the soil. Much of the best properties of the manure is lost by fermentation and by leaching, which would be saved and utilized in the manner above stated. I endeavor in this way to manure and plow all my land for tobacco by the first of April. During the month of April I harrow and well refine the surface; then replot, harrow and thoroughly refine,—breaking and pulverizing the clods. During the month of May I bed the land. This is done by running off the rows with a single-shovel plow the distance

desired,—say three feet or three feet two or three inches apart. The guano is then applied in the furrow at the rate of 250 to 300 pounds per acre. Then follows the double plow, running twice to each row, and bedding upon the guano. When ready to plant these beds are struck off two at a time by a scraper attached to shafts, and drawn by a mule or horse walking between the beds.

The planting is done without further preparation by the hoe or otherwise, by setting the plants in the centre of the bed in a straight line with each other the distance desired, say 30 to 36 inches. The land is thus left in a fine condition to facilitate the cultivation of the crop. Instead of being in hills, as under the old system, requiring nearly the whole surface to be cut by the hoe, there is but little hoe-work needed. As soon as the grass comes through the surface, the 3-tooth cultivator should be put to work, running twice to each row and with care, by which the grass will be effectually killed, leaving only a narrow strip in the centre of the bed to be cut by the hoe. This is now a critical period in the growth of tobacco, and it is very important that this work with the cultivator be done as soon as the grass appears, making true the saying "a stitch in time saves nine." The cultivators should be followed by the hoes to cut the strip of soil left in the centre of the bed, and break the crust around each plant, and put a little fine soil around each. This done the tobacco will need no more work until it attains the size of a summer hat, or has pretty well covered the top of the bed, when it should be plowed with a single-shovel plow, by running a furrow on each side as close as possible to avoid loosening it. The hoes should follow, putting to each plant a moderate sized hill. The season being favorable the growth will be rapid; and about the time the plants generally are large enough to top, it should be again plowed, and this time with a single horse mould-board plow, running twice to each row and turning the soil to the tobacco. This should be followed in three weeks, or when grass appears, by a light scraping with the hoes, when the cultivation of the season is done.

A few general remarks and I will close this article. First, it does not pay under our present market to grow small tobacco. Large tobacco cannot be grown on poor land if 500 lbs. of guano alone were applied to each acre. Make the land rich. Use guano in connection with stable, farm pen, and all kinds of manure that can be raised on the farm. We cannot afford to grow tobacco now for the average price it commanded when produced with slave labor. Then profits were estimated more with reference to the increased value of slaves than from the surplus productions of crops. Now all labor has to be paid for, or done by the land-owner; consequently as soon as the net proceeds of any article of produce falls below a price that will pay a profit on the cost of its production, necessity controls, supplies are reduced, and as a consequence the price advances.

Louisa Co., Va.

J. M. BAKER.

[This series of papers will be continued through several numbers, and will be found the reflection of a valuable and extended experience.—Ed.]

Agriculture in Times Past and Now.

In speaking of our predecessors we wish it understood we have great reverence for their patriotism and private worth. Under such circumstances none ever did better. They were rocked in the cradle of hardships, and wrestled with adversities. As they got through all difficulties, they rose higher and higher in importance. Success was their aim and perseverance their motto.

Before 1820 we did not know personally much of their ways of farming, but have some recollection of what older persons spoke of them. In old times the primitive forests had been respected and held by many for future generations. Labor of the kinds then prevailing was more abundant and cheaper. Horses, oxen and mules did their share of the work, including plowing and hauling; they did also the treading out of the grain, and boys did the riding; those that had barns had treading-floors. Sometimes they had sheds around buildings and the treading was done under them, and the wheat put in the building. More flour than wheat was carried to market. The tobacco was hauled or rolled in hogsheads. There were no turnpikes then. Farming implements were manufactured on the cheapest plans. Inventions were not so frequent as now. Those who owned large tracts were in the habit of clearing a portion of their woods at short intervals, and the new ground was cultivated continually until exhausted; the practice was to haul out and spread what manure had accrued. There was abundance of cattle such as they were. In winter, stock was pretty much stinted to straw and fodder. A considerable percentage of the young cattle lived over the winter to die by the winds of March. I recollect an anecdote to this effect: a gentleman asked a farmer why he kept so many cattle. His reply was, to eat the straw. Well, why do you raise so much straw? Why, to feed the cattle, to be sure. The people did not then seem to care about hoarding up money so much as to live easy and keep good stables. Now and then there were individuals who discounted paper at high figures, and these were denominated shavers.

Within my recollection farmers waked up to the advantages of better cultivation and sought out the best plans of making the farms pay. Where it could well be done they marled their lands, used plaster and clover, and even lime. Most of the old-fashioned and clumsy implements gave way to those more useful and of modern construction. The introduction of good cattle and horses has caused better breeds and animals of greater value. I have known sheep as low as 75 cts. per head and fair cattle from \$10 to \$15; horses from \$50 to \$60. Mark the difference now. We hear of cattle and horses selling at \$1,000 and sheep at \$100. The man of our day is considered far behind the times who keeps indifferent stock. It is, however, now that good stock properly cared for is worthy of attention, and stand out as profitable and indispensable.

When the portable thresher was introduced, people went miles to see them. Now they are

of general use; not only so, but propelled by steam. Even the turnpikes have been superseded by canals and railroads to a considerable extent. Agricultural societies and exhibitions are giving impetus to farming communities. Light is continually shed on our vocation by able and useful periodicals, from the *Old Pioneer* down.

So with new machinery and advanced ideas in the science and practice of the art—more of the staples are produced, so as to be adequate to the demands of commerce and navigation, and insure ample employment. So much for farming being a live business—increasing with time and spreading abroad its benefits. It is well that the broad acres so abundant in the United States should become utilized. Agricultural abundance is the source of wealth, and assists in spreading the arts and sciences; supports commerce and navigation; is the great bank from which is drawn the wherewithal to keep soul and body together, and to form the bone and sinew. Farmers rejoice in seeing all arts and great works to abound and flourish, as their interests flourish with them. PHILLO.

Our French Letter.

Roots of Cultivated Plants.

Messrs. Editors *American Farmer*:

M. Fraas draws attention to a matter not devoid of practical interest: hitherto attention has been mostly bestowed on the depths to which the roots of cultivated crops penetrate, overlooking the radicles or lateral roots. He maintains that a plant feeds better in proportion to its ramified roots and the number the latter contains of mouths or spongioles. The more a root tapers the less it has of branches, and consequently of mouths. Scarlet annual clover when sown in autumn emits from its neck or collar from four to eight buds, which remain in a latent state till spring; when sown in spring the plant only emits half this number of buds; hence the disadvantage of spring sowings; the roots of the clover in question feed in the surface soil, hence the necessity of the latter being rich and friable. Respecting perennial red clover, it has a tap root, which after the first year continues to penetrate in the soil, sending out from a succession of rings or pivots, its radicles in search of food, and at increasing depths in the soil. M. Fraas is of opinion the clover dwindles from the exhaustion of these collars to send out a succession of shoots and buds, caused by a difficulty or reluctance on the part of the radicles to obtain or to search for their food at depths in the soil. All perennial plants have a double development in the roots branching and descending; the first process takes place in autumn, the second in spring. Lucerne sends its root deep into the ground, but at its collar a succession of radicles is sent out, ever absorbing and ever young; hence it resists dry climates and stiff lands, and can penetrate even crevices of schistose rocks in search of food. The root of the sainfoin is more penetrating still, and it can throw out rings of lateral roots and shoots with great facility; the fibres of the roots enlase stones, into the mass of which they can scoop a channel; the rootlets of potatoes are

voracious feeders, but bad disintegrators; the roots of cereals are superficial, those of oats being the most penetrating.

Supply of Nitrogen to Plants.

All experiments made up to the present have failed to demonstrate, that plants desire free nitrogen from the air; the tendency is to show, that that important gas is absorbed in combinations of ammonia or analogous nitrates. How are these then produced in the soil? According to Messrs. Schlessing & Muntz, the capae is due to fermentation, brought about as in ordinary cases by animalcules.

Dr. Holdelius has published some very important conclusions on the transformation that the phosphoric acid of the natural phosphorites undergoes in the soil. Humus, whether as in peat or stable manures, exercises but little effect; still less the carbonic or other organic acids. But the inorganic nitric and ammoniacal salts possess the power of setting free the phosphoric acid to a great degree. Clay soils if watered with liquid manure will give off ammonia; but turf soils will retain this gas, by immediately transforming it into nitric combinations. M. Böhm, an Austrian physiologist, has conducted some experiments with kidney beans; they could not develop in distilled water, but in ordinary water they did, owing to the presence of salts of lime, which transport the elements of the seed to the young stem. M. Peligot has shown, that if beans be watered with a solution of common salt when growing in an ordinary soil, the plant will reject the sodium, and take instead potassium, while if grown in the same solution exclusively they will absorb sodium. Messrs. Delhérain & Maquenne concluded from all these facts, that salts in solution are absolutely necessary to form the migration of the principles of the seed to the infant stems. F. C.

Paris, January 31, 1878.

Regulating the Sale of Fertilizers by Law.

Messrs. Editors *American Farmer*:

In the last issue of your paper you endorse Prof. Wilson's objections to a law for the inspection of fertilizers in a way that might lead your readers to infer that you oppose any law regulating the sale of commercial fertilizers to the farmer. If this inference is a correct one, I think your position is untenable. Your inspection law may have been injudicious or imperfect—not having the text of the law I have no means of judging—and, at any rate, if it was at all similar to common inspection laws, it no doubt had objectionable features that need not belong to a good protective law. But that some sort of protection is needed is evidenced by the unanimity with which intelligent farmers everywhere unite in asking for legislation on this matter.

We farmers have no wish to hinder or injuriously interfere with a business so needful to us as the manufacture and sale of good commercial fertilizers. We recognize this business as a very important factor in agricultural improvement. And this very importance makes it all the more necessary that the trade between the manufac-

turer and the farmer should be conducted on equitable principles; that deceptions should be discountenanced, and the sale and purchase made an honest and intelligible transaction, as far as the nature of the circumstances will admit.

Because we want a protective law is no insinuation against the probity of fertilizer manufacturers as a class; but the impossibility of judging of their goods by an unskilled examination makes their case a very peculiar one. The most honest and reliable dealers recognize this fact, and I have found them entirely willing to submit to a reasonable surveillance as a protection to themselves from a competition with unscrupulous manufacturers, who desire to palm off spurious or worthless goods upon a credulous or helpless farming community.

The facilities for deception in the sale of a piece of calico is not comparable to that of a compound like a commercial fertilizer; it is utterly impossible for a common farmer to judge of its quality by a casual examination. Neither will it do, as your correspondent asserts, to leave the test of genuineness or value to the slow and uncertain answer from the soil; large sums may be wasted while we wait for this indefinite reply. I have made many hundreds of experiments with fertilizers in the last ten years, and I have found good brands to give very poor results under some circumstances; *not* from any want of value in the fertilizer, but from unfavorable conditions of soil, weather or other incidents. If, when a farmer fails to be benefitted by the use of a fertilizer, he is also in doubt as to the quality of the article used, his conclusions must be very vague indeed.

Farmers feel the uncertainty of the venture every time they invest their hard-earned money in large purchases, that they not only run the risk of unfavorable seasons, &c., but the additional risk of having bought a spurious article, with no legal redress. The lessening of these risks and the consequent increase of purchases would be one of the results of a good protective law. They would feel that they know what they were buying; or, if desired, the law's strong arm would be raised for their protection. No doubt it will be difficult to draft a law that will not bear hard on some one, or that will fairly meet every case; but patient wisdom will devise some plan just to all.

In our county—Chester co., Pa.—we have a law that has done us good. It has made all manufacturers careful to maintain the standard and quality of their goods; it has intimidated the unscrupulous, and it has set farmers to considering whether a fertilizer was good and valuable because it was made by a certain popular firm, or because it contained suitable proportions of certain recognizable fertilizing ingredients.

In this respect it was largely educational, and I venture the farmers of our section have gained greater knowledge of the requisites of a good fertilizer in the last three years than in any ten previous years. I enclose a copy of an act now before our General Assembly, proposing to make it a State law. I think, though, some alterations or amendments have been made in this draft.

East Pennsylvania

JOHN I. CARTER.

Experimental Farm, West Grove, Penna.

[The law, a copy of which Mr. Carter sends, provides that every package of commercial fertilizer sold, the price of which is more than \$20 a ton, shall be accompanied by an analysis stating the percentage of nitrogen, or its equivalent of ammonia, of potash, and soluble and insoluble phosphoric acid; that every manufacturer or importer of such fertilizers shall pay a license fee for each kind of fertilizer sold or imported by him, and file with the State Board of Agriculture a list of his agents, and the name and composition of the fertilizer he manufactures. Any person selling a fertilizer without an analysis of its contents, or with an analysis overstating its percentage of valuable ingredients, shall forfeit \$50 for the first and \$100 for each subsequent offence. It is made the duty of the chemist of the Board of Agriculture to analyze specimens of fertilizers furnished by the Board or its agent, and his fees are not to exceed those usual for such services, nor the total sum paid in one year for analyses the amount of license fees received in the same period.—*Ed.*]

Vinegar from Sugar Beets.

Editors American Farmer:

One bushel of sugar beets properly rasped and pressed will yield five gallons of juice, which, treated the same as cider is, will make a stronger vinegar, of as good but different flavor: and in making cider, nine bushels of apples and one of sugar beets will make a cider superior to apples alone. Every farmer can raise sugar beets; and with the juice expressed at the cider-mill make all the vinegar he wants for his own use and have a surplus for sale. With vinegar at a price it could be made for from beets, its consumption would be increased, as it would enter into many articles of manufacture from which the price now precludes it. When it is found how cheap sugar beets can be raised, and their value for vinegar as well as food for stock, they will be grown more.

The best juice can also be worked into sugar as easily as maple sugar now is, and requires no more skill.

ANDREW H. WARD.

Bridgewater, Mass.

Georgia Agricultural Department.

We have received from Dr. Janes, of Georgia, a pamphlet copy, comprising 152 pages, of his annual report of the operations of his department for 1877. This is a most invaluable document to the farmers of Georgia and other of the Southern States, and contains a great mass of useful statistics and the analyses of fertilizers sold in that State, which show some strange results in the reports of the experiments of those who have made returns to the departments.

A large portion of the report is made up with these experiments in tabulated form, which cannot be republished elsewhere, and we content ourselves with some of the comments of Prof. Jones upon the same: "He says that the seasons in many parts of the State were unusually irregular, and consequently not propitious to the use of fertilizers in 1877. In some cases they were so unfavorable that the crops were rather injured than benefitted, especially where highly ammoniated super-phosphates were applied in liberal quantities per acre. Dr. J. says that the effects of humus in the soil, enabling the crop to withstand the injurious effects of drouth, is most striking in many of the experiments, and shows the importance of a judicious rotation of crops involving a restitution of vegetable matter, at least once in three years. The great bane of Southern agriculture has been the denudation of vegetable matter from the soil by continued cultivation of hoed crops, and the results given show that fertilizers almost invariably paid a better per cent. on production and investment on soils abounding in vegetable matter.

A most striking effect is shown in these experiments, in which a record of the different pickings is given,—300 to 400 pounds of seed cotton having been gathered per acre from the fertilized plats at the first picking, when none were gathered from the unfertilized plats; and this Dr. Jones considers is one of the principal benefits derived from the use of fertilizers, especially in the northern part of the State, where early maturity is an important consideration. The results of these, as well as the experiments of 1876, indicate the necessity of covering the fertilizers deep for summer crops in middle and southern Georgia, as a means of preventing the injurious effects of drouth; while more shallow application, even with the seed, is often beneficial in north Georgia, where a vigorous start and climate admit and even require different systems.

The commissioner says the results of the last season still further show what has before been urged by him: the impropriety of the excessive use of highly ammoniated commercial fertilizers on soils denuded of vegetable matter, especially on summer crops. Vast sums of money have been wasted in Georgia in the last twelve years by the application of excessive quantities of fertilizers in the drill. The yield increases with an increased application, within certain limits, with favorable seasons; but when very large quantities are applied, especially in exceptionally dry seasons, the effect is rather injurious than beneficial.

The commissioner alludes to the effects of composts of cotton seed, stable manure and super-phosphates, applied in equal weights per acre, of about 650 bushels each to the ton of 2,000 pounds, and gives the formulas for the making and use of these in composts presented in his last year's report, and published in the *American Farmer* for 1877, page 133.

The late date in the month the report was received precludes our giving a more extended notice of this report as we would desire to do. We will add, however, that the information contained in it alone is of more value to the agri-

culture of Georgia than all the \$300,000 expended in this State for our so-called agricultural college has been to that of Maryland.

The Irish Potato.

In reply to the request of a correspondent, the agricultural editor of the *New York Weekly Times* gives an elaborate description of the various modes of cooking the potato, which we pass over for the purpose of getting at his suggestions for the raising of the esculent—for, as remarked by him, the old proverb hath it, that "in cooking a hare the first thing is to catch him;" so in cooking the potato the same aphorism applies, and before the latter operation is performed, it is well to say something about raising it—and he follows the hint with the subjoined remarks:

The first thing to be done in securing a crop of this esculent is to plant the right variety. There is as much difference in the varieties of potatoes as in the herds of cattle. There are the good, the poor, and the indifferent kinds. Always plant the best variety and the best specimens of that variety. What the best variety is, judgments differ. After trying almost all sorts we have settled down on the Early Rose as No. 1, quantity and quality both being considered. They require rich loamy land, and on such land, by planting only good-sized and fair-formed seed, and getting them in early, we never fail of a bountiful crop, often harvesting 400 bushels per acre.

In these days of potato bugs there is a great advantage in planting an early maturing variety. The first crop of bugs does comparatively little damage. The early comers, those that have hibernated in the ground and lie in ambush waiting for the appearance of the potato shoots, are not great eaters. Certainly they don't live to eat. Their mission seems to be to propagate. We have kept them in a vial for three weeks without food, and they were alive and kicking all this time. They succumbed, however, pretty soon after this, but whether from old age or starvation we cannot say. The larvæ—the slimy grubs hatched from the eggs of the perfect insects that have spent the winter asleep in their subterranean dormitories—these do the mischief. They are perfect gourmands, living to eat and eating to live and grow. Fortunately they do not present their bills till the potatoes have got a good start, and if we plant early and plant an early variety, manuring highly, so that the shoots will start quickly and grow vigorously, we steal a march on the bugs. We have learned not to fear this enemy. We have spent much time in shaking off the little pests into pans with a little kerosene on the bottom—just for medicine—and have picked off thousands by the hand, but last year we relied mainly on scattering a mixture of air-slaked lime and ashes on the vines while wet with dew or rain—and this not to kill the bugs and slugs, but to drive them off and prevent their eating and the deposition of eggs. Like all insects, the potato bug loves a nice clean leaf, both for food and nest-making. This mix-

ture may not be necessary to prevent the ravages of the bug, in case early potatoes are early planted, but it is a capital potato fertilizer, and no money is lost in its application. We never had a better crop than last year, and in the forepart of the season the army of bugs looked as threatening as that with which Xerxes invaded Greece.

We desire particularly to impress potato-raisers with the importance of mellow soil, abundant fertilizers and a good cultivation for this crop. They luxuriate in a virgin soil just redeemed from the forest and abounding in light half-mold. A friend in a neighboring mountain town, who has a large forest farm, as he clears up his woodland puts in potatoes as the first crop, and secures immense crops of the best quality. Few, however, are situated as he is, and the next best thing is to make the potato-patch as much like virgin soil as possible. This can be done by the liberal application of muck or leaf-mold, with a liberal sprinkling of wood ashes. Neither is barn-yard manure such a damage to potatoes as during the prevalence of the rot was apprehended, and perhaps justly at that time. Of late years we have drawn freely on the barn-yard for this crop, and a rotten potato is now a curiosity.

The potato is, emphatically, a potash plant, as is plainly indicated by its ash, which contains, on the average, 50 per cent. potash. Wood ashes are, therefore, a specific in their cultivation. Regard should always be had to the character of the soil. A No. 1 article must not be expected on cold clay soil. A good formula for a fertilizer for this crop is the following, which any farmer can mix for himself: 30 pounds wood ashes, 30 pounds air-slaked lime, 20 pounds fine salt, 15 pounds bone-dust, 15 pounds plaster; the whole to be thoroughly pulverized and mixed. An ounce of this compound in each hill of potatoes will tell a good story at harvest time.

Experiences.

In renewing my subscription for your paper, I enclose a few facts gained by this year's experience:

1. That wood ashes fed freely to swine remove tape worms.
2. That buckwheat sowed after oat harvest, or in corn, makes a fine winter pasture for sheep or hogs.
3. That horses will keep up in flesh, spirit and strength, without grain, when one-half their forage consists of German millet hay, cut just before ripening.
4. That field peas (clay or crowder) are a very desirable crop, either for forage, grain, or green fallow.

H. S. H.

Bedford County, Va.

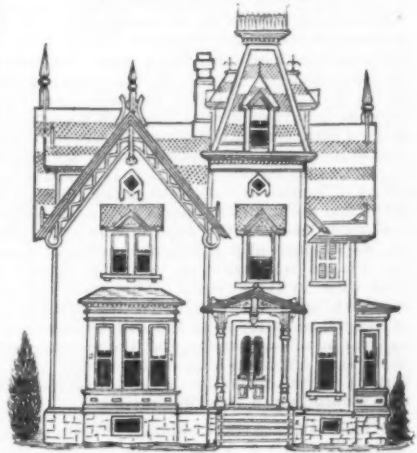
Golden Millet.

I have threshed my millet seed and have some 30 or 40 bushels, and am now feeding the millet hay to my cows. So far it is quite as good as the best timothy hay which they have been on all winter.

W. J. S.

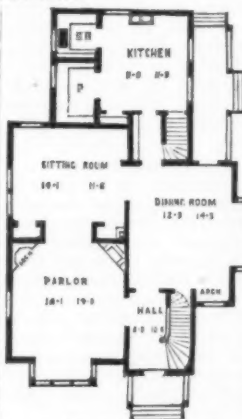
Montgomery County, Md.

Design for a Cottage.



The cuts we give show the elevation and first-floor plan of a small cottage of nine rooms, in the style called Domestic Gothic, designed by Messrs. Palliser, Palliser & Co., and suited to the requirements of a not too numerous family.

There is a cellar under the whole house, with coal-bins, ash-pit, etc.; here is also located a laundry for washing purposes and cooking in summer.



The first floor has parlor 14-0 x 14-1; sitting-room 11-6 x 14-1; dining-room 12-9 x 14-5; kitchen 11 x 11-9; also pantry, sink-room, four closets, waiter's pantry between kitchen and dining-room, which is a very desirable feature, as it shuts off direct communication between these rooms. The second floor contains four large chambers, trunk-room, bath-room, closet to each room, and linen closet in hall.

The bay windows in parlor and dining-room are a very attractive feature, as is also the tower from which a view could be obtained of the surrounding country where it is erected. It is designed to be finished on the interior with white pine, cut and chamfered, no mouldings; finished in natural color, cut and chamfered work picked out in black. Cost about \$3,000, according to location.

CELERY FOR NERVOUSNESS.—Everybody engaged in labor weakening to the nerves should use celery daily in the season and onions in its stead when not in season.

Live Stock.

Management of Ewes:

Messrs. Editors American Farmer:

I have seen many articles from time to time in your interesting journal, written by experienced sheep-raisers, on the management of sheep and lambs; but have seen nothing yet that would precisely accord with my experience in the matter. Most writers seem to advocate the penning of sheep at night during the lambing season. There is where I differ; I have been in the habit of penning my sheep at night from about the 15th of December to 1st of April, and even later if the weather was too inclement for them to be out. For the last five winters I have adopted this plan, and I have invariably lost as many and sometimes more lambs than I raised. I lost last winter about 22, and raised 17. This winter I repaired my shed, which fronts the south, and is about 30 feet long and 10 feet deep, with a pen in front 30x22 feet—making in all an area of 30x30 feet. In this shelter I purposed sheltering 30 sheep, the number I keep. As the beginning of the present winter was very mild, and my ewes did not commence lambing as early as usual, I did not begin sheltering them until some time in January. My first lamb was dropped January 22; in a few days I had some half dozen or more, and out of that number lost four. I concluded to turn them out and give them the fields both night and day, and never shelter them except in case of heavy snows. The result since is 21 lambs and none dead. I would add that I had my pen and the ground under the shelter well covered with straw, and a very comfortable place it was; but still I could not succeed with my lambs under such treatment. Some of my neighbors have given me the same as their experience. Sheep will naturally seek comfortable quarters for their night's lodging, behind hills, fences, bushes, &c., which very often proves as comfortable as any we can furnish them. My experience is, give them fields, except when there is danger of the lambs freezing, which is a rare occurrence in this latitude. If you think these remarks worthy of a place in your columns, you are at liberty to give them to the many readers of your excellent journal.

Very respectfully,

A. A. Co., Md.

T. S. B.

Berkshire Hogs.

Messrs. Editors American Farmer:

I am very often asked by persons who write to know about Berkshires, whether or not they will make large hogs. As I have just killed some, thought I would give you their weights so that the readers of the *American Farmer* (by the way most of my correspondents are of that class) can judge for themselves. As long as I can remember it has been a notion with all of our *old-time farmers* that gilt pigs are not good, which has not been my experience as you will see. I carefully weighed one thoroughbred *Berkshire* sow after she was scalded and scraped clean, and found it to be 460 lbs.; after being opened she

made 310 lbs. of nice pork. The above sow had her first litter of pigs a few days before she was 10 months old, and at that time would not have made over 150 lbs. of pork. I kept one of her first pigs, as you see, less than ten months younger than his dam. He proved as fine a sire as I ever owned, and was weighed in the same way; after being scraped was 600 lbs., and when opened made 560 lbs. of pork; the head when cut off weighed just 40 lbs., which does not look much like gilt pigs were good for nothing.

THOS. J. LEA.

Brighton, Md., February 18th, 1878.

Principles of Breeding.

As there is an increasing attention being now paid to the rearing of live stock, it would be well, especially for our young farmers, to post themselves with a knowledge of the first principles of breeding, and to understand, when reading and discussing the subject, the terms which are applied to the science, as it is now acknowledged to be. The following abstract from an address delivered at the Illinois Industrial University, will be found, in a very small compass, to give much desired information on the subject:

"Man has greatly improved the wild animals, and the most obvious causes are the varying conditions of life and conscious or unconscious selection. Man in his lowest state would naturally save the best animals for breeding purposes; but the improvement would be slow, compared with the improvement accomplished by skilled breeders of the more civilized countries. Before proceeding further I wish to give a few definitions. A 'breed' is a race of animals possessing distinctive characteristics which they uniformly transmit to their offspring. 'Thoroughbred,' 'full-bred' and 'pure-bred' mean the same thing. A 'cross-breed' is the product of a cross between pure-bred animals of distinct breeds. And a 'grade' is an animal having an appreciable amount of the blood of some pure breeds of animals. The first great law is that 'like produces like,' not only in the form but in color, disposition, tendency to lay on flesh and tendency to disease. But oft-times the product is spoken of as resembling some ancestor, and this brings in a modification to the rule, and we add 'or some more remote ancestor.' The probability of an animal resembling an ancestor decreases very rapidly the farther back we go. Hence, the lesson we learn from this is to secure good animals, where ancestry are known to have possessed the same desirable characteristics. The only means of determining this is by his pedigree, which is a history or rather the genealogy of the animal, for a number of generations. We use the word 'prepotent,' meaning that this or that animal impresses on his offspring his own characteristics. The only great test of pedigree is the animal that bears it, and I would strongly impress upon you the importance of breeding only from good animals. Practically the male is of the most importance, because he often represents a large herd and his effects are more prominent.

In commencing breeding—first decide upon what you want, and as a rule take one of the well known breeds, not running after every new breed; and lastly, but first in importance, stick to it. It is not safe as a rule to use a cross-bred bull because he is of finer appearance than his parents, and any such attempt almost invariably ends in failure.

In-and-in breeding is an important question and in itself is not necessarily injurious. But it is dangerous and should not be attempted except by those of great skill in breeding. We cannot expect perfection in any breed, for remarkable excellence in some point prevents the highest development of some other, and we should not in breeding attempt too many things at once.

The conditions of life are of equal importance with excellence of breed, and indeed they go hand in hand together. First mark your ideas, then select those animals that conform the nearest to those ideals, and then adapt your conditions to your needs."

Truths Well Spoken on Sheep Raising.

Col. Polk, in his last report of the doings of the agricultural department of North Carolina, makes the following remarks, which are similar to those held by ninety-nine out of every hundred farmers of the country:

The prominence and importance awarded to this interest [sheep] by the framers of our present constitution was very properly and wisely conceived. But all our efforts to foster and encourage this industry must be comparatively futile in the absence of laws to protect those who would engage in it. With the view of making a faithful exposition of the enormity of a nuisance now so quietly tolerated by the people, I sought to show on the blanks issued for farm statistics, the number of sheep and dogs in each county, and the number of sheep destroyed during the past year by dogs. As before stated, returns were only partially made by a few counties, yet in one county (and this may be regarded as a fair illustration) where they report forty schools, the cost to the people of keeping the dogs reported, and the losses sustained by their ravages, would keep forty children in each of those schools for twelve months, or supply about seven thousand men with bread for one year.

Under our laws sheep are recognized and taxed as property, and could be made to contribute largely to the wealth and prosperity of our people. Dogs are also recognized and protected by our laws as property, but are not taxed, and so far from adding to the wealth and prosperity of the State, a truthful and faithful exhibit would show that they detract from it millions annually. Again, I repeat, it is almost needless to expend either time or money to build up this important interest until we can have better and more effective laws for its protection.

It is estimated the number of cattle likely to be driven this season from Texas into Kansas is over 200,000, or about the same as last year. It is also stated that Texas cattle drovers found their business quite profitable last year.

Sale of Jersey Cattle and Horses.

The herd of the late Wm. Devries was sold in Baltimore at public sale on the 20th ultimo, all being herd-register animals except one descended from the John Glenn stock. Fourteen females, including two imported, sold for \$1,685,—an average of \$120.35; and five bulls brought \$250,—an average of \$30.

The sale of trotting stock of Dr. Woods, advertised in the *Farmer* for February, was largely attended, but the bids offered were so low for the quality of the horses offered that most of them were withdrawn.

The bay gelding Clinton, 4 years old, sired by Hamlet, son of Volunteer, brought \$125; sold to Silas W. Conn. Cascade, a brown bay, 8 years old, sired by Taylor's Duke of Orange, was sold to John Ridgely for \$200.

The bay stallion Charon, four years old, by Hamlet, brought \$145, to L. T. Hilden; and Mazeppa, a magnificent brown stallion, nine years old, sold for \$300, to David Sumwalt. The other horses, Prince, Black Hawk, Pilot, Flora, Summit and Jay Hawk, were withdrawn.

Fruit Cellars.

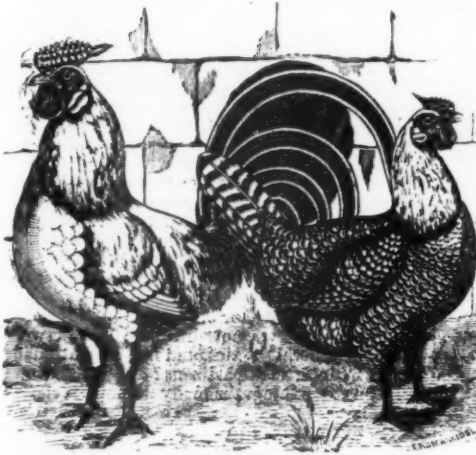
The editor of the *Journal of Chemistry* gives his experience in keeping fruit:

In order to keep fruit, several conditions are important. In the first place, the atmosphere of a fruit room should be dry; there should be no more dampness than ordinarily exists in the cold outside air. The room should be susceptible of ventilation in proper weather, not by direct currents of air, but by air modified before it reaches the fruit. A fruit room must be frost-proof; it must be cleanly and accessible. As regards location, it may be placed on a side hill, the excavation opening to the south; or it may be placed under a barn or stable, or other convenient out-building.

Ten years ago we constructed a fruit cellar under our stable, and it has proved so satisfactory that we venture to give a brief description of it. The division walls are constructed of brick, and the apartments are two in number, an outer and an inner room. The outer room is but partly underground, and is 10 by 12 feet in area, and 8 feet high. The inner room is wholly underground, and frost proof; it has four brick walls and a cemented floor. In this room the fruit is stored early in December, when the weather becomes cold. The outer room holds the fruit during the autumn months after it is gathered, and it is cool, well lighted, and dry. The windows are left open and a free circulation of air allowed so long as no danger from frost exists. When the fruit is taken to the inner room, the door is closed, and no light admitted. Ventilation is secured in moderate weather by opening the inner door and throwing down a window in the outer room. In this cellar we kept apples of last season's growth until the present winter in perfect condition. Some of these apples, exhibited at the autumn agricultural fairs, were pronounced as fresh as those of the past season's growth.

Hamburgs.

By G. O. BROWN, Montvue Poultry Yards, Brooklandville, Md.



There are six varieties of Hamburgs: the Silver Spangled, Golden Spangled, Silver Pencilled, Golden Pencilled, Black and the White. The two varieties of Pencilled were originally imported from Holland, and many years ago were known as the Dutch Everlasting Layers. The Spangled and Black varieties are recognized as natives of England of unknown antiquity. The Spangled were formerly known as Lancashire Mooneys and also as Yorkshire Pheasants, and the Black as the Black Pheasant fowl.

Mr. Beldon, the most successful breeder of Hamburgs in England, says:

"Hamburgs are without doubt the most beautiful breed of poultry we possess, as well as one of the most useful. The dwellers in the country will generally prefer the Silver, while the citizen will take the Golden or Black. But all of them, in their matchless variety of marking and color, will delight the eye with the utmost degree

which is perhaps possible of beauty in fowls.

"As a rule Hamburgs are a healthy breed, and for the farmer I think they are the fowl of fowls.

"On a good homestead they will almost keep themselves, and if well attended to will pay as well as any other part of his stock.

"I have often had pullets laying at five months old, especially of the Pencilled varieties; the Spangled do not generally lay quite so early.

"They are small eaters and wonderful egg-producers,—a single hen laying in a twelvemonth, under favorable circumstances, from 200 to 220 eggs. They are also capital foragers."

Being one of the non-incubating breeds their eggs necessarily have to be hatched and reared by other hens. Although they are small, yet their meat makes up for it in juicy richness, and their eggs are very fine, with bright yellow yolks. Our engraving, kindly furnished by *Fanciers' Journal*, Springfield, Mass., is of the Silver Pencilled variety, and so well portrays the characteristic plumage, an extended description is hardly necessary. Each feather of the hen is alternately marked with a black then a white stripe; the Golden Pencilled, it is golden and black; the Spangled varieties, each feather terminates with a spangle of a bright greenish black. On a green lawn their beautiful and peculiarly marked plumage shows them off to a great advantage.

Ducks—Setting Eggs and Rearing Young.

If possible, set duck eggs under hens, as they make better mothers and will find food for the ducklings—something a duck will not do. After the hen has set four weeks the ducklings will appear. Perhaps it will be necessary to help some of them from the shell, as they are not as lively as chickens, and sometimes are unable to get out alone.

A pen should be made with boards eight or ten inches high and five feet square, or large enough to contain the number of ducklings you may have.

The hen should be confined in a coop in one corner of the yard, so as not to wander away. Keep your brood confined until it is a month old, and do not allow them to follow the hen, for if you do they stray away and your flock will grow numerically smaller. When they are sufficiently large, and have their body feathers, less care may be bestowed upon them, and they may range for themselves.

As for food, for the first three or four weeks we would recommend a variety. The week directly after they are hatched, give them soaked bread, coarse bread being preferable as it is less pasty, potatoes, boiled and mashed, with bran or shorts. As they become older, do away with the former feed and use meal and bran, equal parts scalded, and occasionally mixed with boiled potatoes, chopped onion-tops or lettuce. This has been our bill of fare for our web-footed pets for some years, and we have met with great success.

Last, but not least, beware of water. You may think this is a strange suggestion, but there are more young tame ducks lost on account of water than from any other cause. A shallow dish, with water say two or three inches deep, is enough till they are a month old. If allowed free access to a pond or stream, they will get waterlogged and invariably die. And if they escape this, cramp is most sure to attack them, and, after a few days of tumbling and twisting, death relieves them from any more such actions.

We know of no variety easier to rear than the Rouens, and we have a young flock of fifteen or twenty that are as sprightly as so many kittens.

They all look as near alike as peas, and are the admiration of all who see them.—*I. P. Lord in Pacific Rural Press.*

✕ Answers to Correspondents.

"Which is best to set ducks' eggs under, a hen or a duck?"—*AQUATIC, Howard Co.*

A hen is better; but after the first seven days the eggs should be sprinkled every three days with tepid water while the hen is off feeding. We give an article this month on ducks, &c.

"What variety of the Hamburgs are the most handsome?"—*PERSIMMONS, Manassas.*

That is a matter of taste; some admire the Silvers and some the Goldenes. What would suit one fancy, would not another. *They are all handsome.*

"Can pigeons be kept—different kinds—without mixing, if allowed to be kept in loft together?"—*EMMA C., Belair.*

Yes; if mated before being put in the loft a dozen kinds may be kept together. In April *Farmer* we shall have an article on pigeons, with illustration of some of the high-class birds.

The Grange.

Necessities and Opportunities of the Grange.

Messrs. Editors American Farmer:

I again offer to intrude upon your valuable space, by pressing upon the grange my estimation of its necessities. It is true, it has, to some extent, entered the wedge, yet not driven it home. Its advantages are not realized in full and only to the few. Our desire is to extend these advantages to all.

Now we contend for a combination practically capable of rousing the dormant energies as well as raising the status of labor, enabling it out of its savings to found its own stores, schools and manufactories—producing interest in current events—drawing deposits from the dram-shops—investing in a business transaction returning good interest on investment, morally, physically and pecuniarily.

All this has been done repeatedly, successfully. It has proved itself abundantly able to improve labor and create capital. Its fruits are being enjoyed by thousands in England, by the poorest laborers in that industrious hive. Here in this country, where the pressure is becoming equally great—notwithstanding the abundance of land, agricultural pursuits occupying half of all the labor and capital,—competition is so fierce, combined opposing interests so powerful, markets so distant, producers isolated, that unless we too combine before we exhaust the remaining fertility of our soils, our labor, our capital, our brains, will not enable us to continue to compete with opposing interests. No people can continue to flourish without a self-sustaining agriculture. New lands are becoming scarce, old lands worn out; our own State is greatly impoverished, thousands of acres untilled, and incapable under present circumstances of supporting labor. Capital finds better interest in other investments.

Shall we not rescue ourselves, the State and the people, from impending ruin? Why should not the brains and money invested in land be as remunerative as investments in other pursuits?

Hence has arisen the Grange, impelled by urgent necessity, attempting to combine a great interest to look into the state of affairs, to rescue it from its depression and to remedy existing grievances. It eschews politics and religion—it recognizes the impossibility of reconciling partizans and sects; yet it looks to higher principles, love to man and to God; and will not the inclination of these principles overthrow partizanship and sectarianism? Is it not equally as necessary we should combine to ameliorate political action as business matters? Holding the balance of power towards both, shall we not endeavor to regulate both for our own and for the general interests,—not as partizans, but as citizens seeing a pressing necessity for economy? In all political matters can we not draw the line between local and general politics, and not be continually misled by interested partizans?

To do these things, as many do not see clearly our objects or intentions,—as many believe we are united to control and lessen the wages of labor, some to injure manufacturers,—let us clearly show our real intention; let us strengthen the Order by offering facilities for all, rich and poor, to obtain the benefit of our combination, by offering to all in or out of the order the same advantage we expect to obtain from co-operation; as far as possible make everything subsidiary to the order, everything conducive to society, economy, and the general benefit of humanity.

Now we know no better way to accomplish this purpose, not interfering with existing agencies, than each one combining and uniting his small capital, to form a *bania* to enable us to establish a *store* to purchase through our own managers, or through existing agencies, all articles at first cost—inducing patronage by offering nothing except best articles at fair prices; dividing quarterly with all purchasers half the profits, adding the other half to capital. Looking to a small beginning, we anticipate a continuous increase in arithmetical proportion of capital, in a comparatively short time, adhering to rigid business principles, to proper supervising management, to right guards over receipts and expenditures—buying and selling only for cash—we expect in time to be able to control trade; we expect to be able to control or make our own manufactures, our own fertilizers and agricultural implements; and again, as time passes, and as capital enlarges itself, we expect to enforce a general cash system, beneficial to everybody. Centralizing in our class and its affliating branches, controlling influences, enriching the order, reforming political abuses, sustaining labor, the status of all true men; sustaining with our own means, agricultural stations—improving impoverished lands, increasing population. Herein lies the great object of our order; our enlarged capital enures not to individuals, but to labor as a whole; it will build up manufactures, give remunerating wages, and while it insures profit to the agriculturist, it calls for more labor,—demands increased wages—and when agriculture thrives, its impulse stimulates all branches of trade, lessening outlay, increasing income—ab-

solving the order of all selfishness in its efforts, by benefitting itself to extend its benefits to a whole people.

A. T. W.

Agriculture as a Science.

Upon the occasion of installation of the officers of Mantua Grange, No. 169, Baltimore Co. Md., the W. M., Col. Edward P. Philpot, and the W. Flora, Miss Annie Given, read addresses pertinent to the occasion, and which were handsomely received by the assembled company. From both of these we give extracts below.

The Master, saying what he had written was given with no special claims to originality, after a suitable introduction as to the importance of the interest of agriculture, said:

Various facts, which cannot now be stated in detail, strengthen the conclusion that American agriculture, especially during the last twenty years, has made great progress. Farms throughout the country are more thoroughly cleared of stumps and stones; fences are neater and more durable; farm houses are more conveniently and tastefully built and adorned; barns are constructed with more reference to the comfort of stock, to the housing of produce and to the preparation and preservation of manure; a more ready access to markets is afforded by railroads and canals; improvements are made in the implements in general use,—while a salubrious climate, a prolific soil, a broad and quiet land, and a beneficent Providence have crowned with abundant success the labors of the husbandman.

Having reached this agricultural vantage ground by honest toil, guided by experience and the lights of science, it is an interesting question to every farmer, what are the conditions of a still grander progress and prosperity? Let us, Brothers and Sisters, endeavor to make this inquiry, and see if we cannot find out and explain the conditions so necessary for our prosperity and happiness. The essential conditions, it seems to me, are, in the first place, 1st, peace; 2d, a continued demand for agricultural products, both at home and abroad; 3d, an increased respect for labor; 4th, a more thorough knowledge and practice of agriculture as an art and science; 5th, and finally, a more complete education of our farmers in political economy, in taste and general reading.

Let us, Brothers and Sisters, briefly consider these conditions. In the first place a state of war is inimical to agricultural prosperity; it *always* (whether domestic or foreign) *reduces* the productive industry of the country engaged in it, and disturbs nearly all the great interests of society. 1st, we must preserve our normal condition, which is peace, if agriculture is to prosper. The *second* condition, on which depends our agricultural progress, is the continued and increased demand for our products, both at home and abroad. If our population increases in the ratio of the last decade, 100,000,000 of inhabitants will be under American law in the year 1950. Beside supplying this rapidly growing population, Europe and portions of South America

will continue to be our customers. The statistics of our commerce prove that *corn is king*, and that it can *always* be made, as it is *now*,—the great conservator of *peace* between England and the United States. The parliamentary returns of Great Britain for the calendar year even as far back as 1861 exhibit the following important facts in regard to the amount in bushels of breadstuffs imported for that year: Wheat, 86,552,097 bushels, of which the United States furnished 38,361,675 bushels, or forty-four per cent.; Indian corn, 20,360,004 bushels, of which the United States furnished 11,705,034 bushels, or fifty-seven per cent. This vast amount has been exported to Great Britain during the war while all the Southern ports were blockaded, showing that we furnish even in time of war about one-half of all the food imported into Great Britain, and is *immensely* increasing every year. The third condition, on which depends our agricultural progress, is *increased respect for labor*. In many portions of the United States this condition is amply fulfilled, and the healthful results are plainly seen in finely cultivated farms, in improved homes, in education, thrift and *all* the honest pursuits of an intelligent and respected industry. The two prominent causes which have tended to degrade labor in the United States are, first, the many avenues to wealth, respectability and position open to young men, independent of manual labor; and, secondly, the condition of a large portion of our population. A great point will be gained for agricultural purposes when farmers shall cherish *not only* a high respect for their employment *themselves*, but instill their sentiments and convictions into the minds of their children. It is not only a great mistake but a great misfortune that young men should feel dissatisfied with the comparatively *slow* gains of agriculture, or that they should regard the farmer's life as one of *tamelessness* and drudgery. They notice the rapid growth of the prosperity of the merchant, the trader or the professional man, and see him in situations of *apparent* comfort and ease, *limiting, however*, their observations to the *few* who are successful, and *not noticing* the *many* who fail of ultimate success. Independent of the unrest, the disappointed ambition, the wear and tear and mean rewards of *public* life, it is said that of one thousand merchants who had kept accounts at one of the Boston banks, *only six died rich*; on the other hand the farmer if not absolutely rich is at *least* independent. He has a home which his labor and his taste have adorned; he has broad acres, not always held by lease as in many countries, but as a freehold,—if not at the beginning, this is generally the final result. In England and Scotland *land* in the general is in hands of the few, and remains in that condition. Not so in our country. No law of entail or primogeniture fosters the accumulation of overgrown estates. It is one of the blessings of the American farmer that he owns in fee-simple the land which he cultivates; if he does not, by industry and economy he hopes soon to do so.

Labor, for a fair remuneration, whether of the brain or hand, should be the glory of America; besides, there is true dignity in labor, especially in cultivating the soil. The object which the farmer has in view is to subdue the earth, to

eradicate its briars and thorns and to plant in their stead what is useful and beautiful to man. It is to fulfill the original appointment of the Creator that man "shall eat bread in the sweat of his face." "Labor," says a noble worker, "has been made by Providence the law of man's condition; it is the price at which whatever is valuable in life must be earned." Whatever, therefore, degrades labor as the business of life, or renders it distasteful or dishonorable, does violence to our social laws no less than to a wise economy. All improvement, all progress of the race of man in civilization, has been the result of intelligent labor. It has built our cities, dug our canals, constructed our railways, developed our mines, built our steamers and ships, given life and energy to the industrial arts, and, *above all*, is feeding and clothing our people and providing for their happiness. "The nation," says Doctor Samuel Johnson, "that can furnish food and raiment (*those* universal commodities) may have her ships welcomed at a thousand ports, or sit at home and receive the tribute of foreign countries, enjoy their arts or treasure up their gold." Let labor, therefore, be crowned with honor,—that labor, especially, which contributes so much to the welfare of man, and allows him to approach nearest, through Nature, to Nature's God. The fourth condition, on which depends our agricultural progress, is a *more* thorough knowledge and practice of agriculture as a science and as an art; and by this is meant a knowledge of the principles, the whys and the wherefores, which lie at the foundation of successful farming, and of the practical application of those principles, combining skill, economy and all the appliances of art. The great difficulty with the American farmer has been and still is, that he has been nurtured and educated in the habit of cultivating a primitive soil. The labor and expense attending the accumulation and application of manure, with the necessity of unlearning old habits and theories, have made him tempt Nature to the verge of exhaustion and degrade a noble profession to one of mere routine. While our people are ever disposed to boast of their inventive skill and teachable disposition, the older nations which we affect to despise offer us some valuable lessons in agriculture. The Chinese, for example, by minute and careful culture, by rotation of crops and by the use of *every* possible kind of manure, have made their lands yield undiminished products for thousands of years. The northern provinces of China produce two annual crops. (And it is said that towards the south five are usually obtained every two years.) This prodigious yield has continued for ages, and yet the soil is rich and productive, teeming with nearly four hundred millions of human beings. The spade is extensively used, every inch of ground is thoroughly tilled, the hills are terraced and the soil irrigated wherever possible. Agriculture is everywhere honored and encouraged; the Emperor himself goes annually to the field and turns the first vernal furrow. If China or Japan were to follow our methods of farming, famine and death would soon sweep millions into their graves. There is still in our country (strange to say) a large amount of what may be styled routine farming—that is to say, farming

as our fathers and grandfathers used to do. In some cases, where the soil is inexhaustible, this method may be the best method of farming for the *present owners*; besides, the example of father to son is invaluable, provided that example be good. Practical knowledge is certainly superior to mere theory; but to persist in the same succession of crops, in replanting the same and often the poorest seed, in pursuing the same methods of culture, in rearing the same common stock, in using the same poor implements of husbandry, is to deny the value of the aggregate experience of men of similar pursuits, and to ignore the progress of the age in science and the useful arts. It should be the aim of every young farmer to do not only as well as his father, but to do his best "to make *two* blades of grass grow where one grew before." We are all, I fear, too apt to ignore to too great an extent book farming. Books, I know, often err in their theories and fanciful farming projects; but let me assure you that there is to be found *much* of value in their suggestions, and it becomes the intelligent farmer to select the wheat from the chaff, and not by prejudice reject the whole. Agriculture is a growth,—like the plant it cultivates, and like the mind, also, the more it is developed the more it yields. Of all *human* pursuits *agriculture* is *first* in order, in *necessity* and importance. The best farmer is likely to be the most intelligent man; and a community of knowledge is one of the strongest ties that can bind and bless society. Agricultural knowledge, therefore, begets productiveness, and in the same proportion develops the wealth, the prosperity and the progress of our country. Sir Humphrey Davy once remarked, in speaking of the future influence of agriculture, that "nothing is impossible to labor aided by science. The objects of the skillful agriculturist are like those of the thoughtful patriot. Men value most what they have gained by effort, and a just confidence in their own powers results from success. They love their country better because they have seen it improved by their own talents and industry, and they identify with their own interests the existence of those institutions and pursuits which have afforded them security, independence and the multiplied enjoyments of civilized life." How strongly do these noble words from the *father* of agricultural science appeal to the judgment and pride of every farmer to excel in his calling? To this end the farmer should be educated in those studies which aim to make him a thoughtful and intelligent citizen. Being the vast majority in numbers and wealth, and sustaining the wheels of finance, of trade, manufactures and commerce, the agriculturist has too much at stake to be behind *any* in education and influence. Finally, the farmer should breathe the genial atmosphere of *thought*, which, coming to us from distant ages and across the sea, is fanned by press, pamphlet and printed book.

Embellish the Farm and Home.

From the address of Miss Annie Given, W. Flora of Mantua, No. 169, which was a plea for Horticulture on the Farm, we give the following:

There are among us men who look upon the cultivation of flowers with perfect contempt. They can see no utility in this occupation, and look upon the amateur florist as a sentimental character, more fitted to write sonnets and read poetry than to act efficiently in the business of life. Such claim to be our matter-of-fact men. Flowers, they admit, are *pretty* things, fitted to please the idle; but *they*, forsooth, have occupation of *more importance* than to attend to *such trifles*; and from their eminence they look down with contempt upon the grown-up man who wastes his time in the cultivation of these insignificant objects. No one was ever intended for a mere business man, to travel as in a bark mill, in one dull, dreary round, day in and day out, to exert every faculty in the business of life.

Men are not created as machines for the production of a required amount of useful commodity; they have more to do than to earn their bread and eat it; more to accomplish than to strive for a high station and fill it. Man has a moral nature to strengthen and educate; he has a susceptibility of soul to be touched and exerted, and this is more quickly accomplished by an attention to the works of Him who has left the marks of those attributes which warm and purify and exalt the heart. We hold it the duty of every good farmer to render his home as happy and agreeable as possible; to combine the solid comforts of life with the elegant pleasures of taste. We do not urge the sacrifice of substantial enjoyments to those of the taste or fancy; we would secure them both. Let every farmer, therefore, appropriate a liberal allowance of ground for a front yard to his house. It should be expansive enough to permit the execution of a regular design, in laying out the lines for walks, groves, rows of trees, shrubbery and flowers. It should be handsomely graded,—sloping downwards from the house, in front and on each hand. In the selection of the trees, shrubbery and flowers, consult the taste of your “better half” and don’t spare any expense she may require in order to gratify her taste. A taste for trees and plants and flowers is the love an enlightened mind and a tender heart pays to nature; it is a peculiar attribute of woman, exhibiting the gentleness and purity of her sex, and every husband should encourage it; for his wife and daughters will prove wiser and happier and better by its cultivation. We will add but one remark more, fearing our hearers may deem the length of this article an encroachment upon more important topics. Never permit the suggestions of a momentary cupidity to induce you to graze your front yard. The grass may look *luxurious* and tempting, and it may seem “a sin” to lose it; but better to mow or shear your yard than to graze it. A cow or horse will in one hour destroy the growth of years. Nothing is more provoking to a man of taste than to see the trees he has planted, the vines and flowers he has nurtured for years, destroyed as *fodder* for *beasts*!

RUTHSBURG GRANGE, Queen Anne’s Co., is making arrangements to build themselves a new hall. The building will be 22x42 feet, two stories high; the grange hall in second story.

Maryland Granges.

BALTIMORE COUNTY GRANGE, No. 13, will hold its regular quarterly meeting on Tuesday, March 5th, at 11 A. M., at Temperance Temple, N. Gay street, Baltimore.

GLENWOOD GRANGE, No. 41, Howard Co., has elected the following to the positions named for the ensuing year: G. W. Linthicum, Master; L. T. G. Owings, Overseer; Wash. C. Musgrove, Lecturer; A. G. Mathews, Steward; J. E. Buck, Asst. Steward; Wm. A. Ridgely, Chaplain; David Clark, Treasurer; E. M. Devilbiss, Secretary; Jas. H. Clark, Gate-Keeper; Mrs. M. L. Linthicum, Ceres; Mrs. Harriet Musgrove, Pomona; Mrs. Josephine Buck, Flora; Miss Sallie E. Kinsey, Lady Assistant Steward.

MANTUA GRANGE, No. 169, Baltimore Co., has elected Sister Tillie Caples Pomona, vice Mrs. Cole, resigned; Miss Josephine Chilcoat is Lady Assistant.

HOMELAND GRANGE, No. 170, has elected Augustus W. Sweeney Master, and he, with the other officers, will be installed on Wednesday, March 6th.

Professor Stockbridge on Barn-yard Manure.

The N. Y. *Atlas* having expressed the opinion that Prof. Stockbridge, in advocating his theory of the use of chemical manures, underestimated the value of yard manure, which he had denominated waste products, and was injuring the farming interest thereby, the Professor replies:

“Your remarks do not fairly and fully represent my oft-repeated opinion of the value of yard manure and the place it should occupy in our system of fertilization, as the following quotation from my report on the use of chemical manures made 1875 will show. After speaking of the results of the use of chemicals, the report goes on to say: ‘Barn-yard manure in general culture will still be king. For it is and will continue to be an unavoidable waste product, incident to many branches of farming; a waste product of every form of dairying; a waste product of growing and fattening beef, pork and mutton, and a waste product caused by the necessity of keeping teams to work on farms and other general transportation. It would be the acme of ignorance and thriftlessness not to preserve, husband and use this and all the matter of our slaughtering establishments, of all our horn, hoof, hide, bone and glue establishments; of all our woolen manufactories; of all our fisheries and the sewage of country, town and city. But after all this has been saved and utilized by application to our farms, a vast field will be left for the profitable employment of chemical manures, and the world is asking for the increased products. The fair and legitimate conclusion to be drawn from the experiments with chemicals is that barn-yard manure, valuable as it is, is not the best material, or in the best form in which to obtain the food of plants, if that is to be purchased at its ordinary price.’ The foregoing quotation I trust will satisfy you that I have used the term ‘waste products’ with a different meaning from that which you represented me as giving it, and that I believe in saving and using yard manure.”

The Dairy.

Preservation of Green Corn-Fodder.

We had the pleasure one day last month of witnessing the very satisfactory results which have attended the preservation on a large scale according to the plan recommended by M. Goffart, the distinguished French agriculturist, frequently referred to in these pages, of green corn-fodder. Mr. Francis Morris, of Oakland, in Howard county, in this State, has for two years made essays in this important matter; and while the success of his first experiment was very gratifying, the present year's experience leaves nothing in doubt as to the practicability, economy and desirability of this process—one which so simplifies the problems meeting the dairy farmer in the winter, as to do away almost entirely with the drawbacks usually attending that branch of husbandry, from a failure to secure succulent food for preserving in winter the health of his cattle and maintaining the flow of milk.

Mr. Morris's plan of preserving the fodder differs from that described where the trenches are out of doors. In the basement of his capacious barn, between two of the supporting walls, he had two division walls built from the ground to the floor overhead, thus giving three narrow cell-like compartments of about four feet in width, twenty in depth and nine feet high. The fronts of these cells are closed by heavy doors in sections. The barn floor above them is so constructed as to be taken up, and the straw cutter is placed so that the fodder and straw as cut will fall at once into the cells.

The practice in filling the compartments is to cut enough straw in advance to mix with the fodder, the two materials being used in equal proportions. The straw cutter, one of the largest and most effective sorts, is driven by a six-horse sweep power, and enough straw can be cut in from an hour and a half to two hours for each cell. The cut straw is thrown to one side of the hatchways, which are then opened, and the fodder as hauled from the field is fed from the wagons to the cutter, and as cut is thrown at once through the hatchways into the cells below, hands on the opposite side throwing in the cut straw at the same time, and two men in the cells packing the whole compactly as possible by treading with their feet. As soon as the cell is filled to within a foot of the floor, a layer of earth of that thickness is thrown over the whole, and packed tightly down and rammed so as to exclude air. The hatchways are then put on, and the next compartment

is then filled. By this plan the filling of one cell is completed in from four to five hours. In the first trial salt was added, but last year it was omitted—it not being considered as contributing to the preservation of the fodder—but a little is sprinkled over it when fed to the cattle and sheep.

As the process of fermentation goes on, the mass in the cells shrinks and declines. Every few days more earth is added on the top and well rammed. From the time of filling to that of opening of the cells, the volume had sunk about three feet. The earth used is of clayey consistency, sandy soil being too porous and liable to admit air. The estimated contents of each cell as opened was five tons weight.

The fodder for preserving is grown in the ordinary way in drills, and is cut as the ears are forming, the stalks containing then their greatest amount of sugar and nutritive properties.

The fodder as taken from the mass, although soft and easily broken up, has not its parts disintegrated, and the stalks and leaves preserve their outline and a good deal of their color. The fermentation undergone leaves an acid taste, not at all unpleasant, and apparently relished by cows as well as sheep. The rations given the cows is 10 lbs. each morning and evening; the sheep eat it almost at pleasure, and both do well upon it. As soon as the first pit was opened (about the 10th of December) the flow of the cows' milk increased, and the color of the butter deepened; the flavor, as we found by test, being sweet and agreeable.

Mr. Morris, in demonstrating by a practical exemplification on so large a scale that the preservation of corn-fodder can be so readily and cheaply accomplished, deserves the thanks of every farmer who keeps ever so small a herd of milk cows.

Michigan Agricultural College.

The last annual report of this institution, just published, shows a list of 154 students in the College, "all pursuing an agricultural education." Of the 676 acres owned by the college, 300 acres are under cultivation. Among the cattle on the farm, there are Short-horns, Herefords, Devons, Ayreshires, Galloways and Jerseys. Of sheep there are Cotswolds, Lincolns, Southdowns, Spanish Merinos and black-faced Highlands; and of swine, there are Essex, Berkshire, Suffolk and Poland-China.

The advertisement of Messrs. Hull & Scotney deserves notice from those who wish to secure the services of a commission house in Philadelphia for the sale of farm products, fruits, &c.

Work for the Month—March.

Work appropriate to the season has been in many cases much forwarded by the opportunities for anticipating its usual performance; but as the active campaign opens there is never any lack of employment for hands or teams, and a good preparation for it is the determination to do thoroughly, and as near the right time as practicable, everything which there is to do.

Plowing.—A great deal depends upon the effective way of doing this, and great care should be taken to do it well. There are comparatively few cases where the bringing up to the surface of an inch or so of the subsoil will not be to the ultimate advantage of the land, and deep plowing is a good preparation against the droughts of summer. A sod well turned under affords by the decay of the roots not only abundance of food for the roots of corn and tobacco, but tends to give that cool porosity to the soil in which they delight.

Oats.—The earlier this grain can be put in, after the land is in fit condition, the better it is and the better the chances for a crop. The land ought to be in good heart; and after corn, especially if cloverseed is to be sown, the addition of a couple of hundred pounds of a good superphosphate will be found to pay on most land.

Corn.—The preparation for this crop necessitates a great deal of work in the way of plowing, getting out manure, &c.; and it is not too soon to begin. The plant is so rank a grower that it is enabled to assimilate grosser food than some others can digest.

Barley.—Should be gotten in as early as may be. The land for it ought to be in good order and well enriched. It seems to prefer soils of rather light texture, but there is little danger of applying too much manure for it. This is an excellent crop with which to sow clover.

Potatoes.—New land, or that containing a good proportion of vegetable fibre, especially if having also a slight admixture of sand, is best adapted to this crop. Well-rotted composts and mineral manures are the best adapted to this crop. A very good article on their cultivation is given on page 87.

Clover.—If not yet sown, it is better now to wait till the frost is out of the ground and then sow. Follow with a light harrow and roll.

Orchard Grass.—See what was said on this subject in last month's *Farmer*. Two bushels of seed, when used alone, is about the right quantity to the acre, and a light harrowing is the best way to cover it, especially if sown on wheat or oats.

Tobacco.—There ought to have been no difficulty in sowing seed this season; but if not done, it should be without delay. That in bulk in the house will need to be frequently looked after, and not allowed to heat. If found becoming warm it should be shaken out and hung up to dry.

Root Crops.—The preparation of the land for these cannot be begun too early, and every

farmer who keeps a herd of cows or a flock of sheep, however small, will find his profit in raising a small quantity of mangels, sugar-beets, carrots or parsnips. Their health-giving and health-preserving qualities make them worth far more than their intrinsic value as succulent food in winter. Deep preparation of the soil goes a long way to success in their culture.

Manures.—Cart out and spread those made on the farm; keep your compost heaps growing, and provide in time your supplies of commercial fertilizers. The leading article in the present number of the *American Farmer* deserves careful reading in this connection.

Live Stock.—In this region this is often the most trying season upon all kinds of farm animals, and watchful care should be observed to guard them against its dangers. Milch cows, and those about to come in, and mares in foal, need special attention as to feed and quarters. Horses, on which so heavy a demand will soon be made, should receive nutritious feed, and be gradually accustomed to hard work. Give them good dry litter for bedding, and see that they are regularly watered and cleaned. All kinds of stock should be regularly salted.

National Agricultural Congress.

This organization met on the 19th in Washington, D. C., with a fair attendance, comprising some distinguished and able men.—Dr. Janes, of Georgia, in the chair, in the place of Mr. W. C. Flagg, the president, detained by sickness. The only representatives from Maryland seemed to be persons connected with the agricultural college.

Resolutions were passed in favor of the general government owning and operating the principal lines of railroads, and urging the further appropriation of proceeds of sales of public lands to educational purposes; also the following, which endorses a measure urgently advocated heretofore in these pages:

"That veterinary practice in this country is quite too generally unscientific and empirical; that the need of educating skilled veterinarians is imperative, and the attention of agricultural colleges is respectfully and urgently directed to more vigorous efforts in this direction."

Numerous other resolutions were offered, discussed and given appropriate references; discussions on various topics ensued and addresses and papers were read. One of the professors of the Maryland Agricultural College submitted the question: "Is one course of four years sufficient to develop scientists, when a portion of that time is required for manual labor?" It was discussed at some length and decided by a vote in the negative. It does not appear, however, that it was voted that the appropriate work of agricultural colleges is to develop "scientists" instead of to make educated and skillful farmers and mechanics.

The Congress adjourned to meet in August at New Haven.

Horticulture.

Maryland Horticultural Society.

The February show, held on the evening of the 26th, in the south café of the Academy of Music, was one of the most brilliant monthly exhibitions the society has ever had. The deposits were nearly all of high grades of excellence, there were few or no inferior specimens, and the abundance of bloom, required by the new rule for greenhouse plants, with the choice collections of cut flowers and designs, gave great brightness to the beautiful hall in which the show was made.

The meeting was a large one, and composed evidently of persons of intelligence, desirous of being better informed as to the culture of plants by amateur hands. Mr. Wm. Fraser, who has demonstrated in the conservatory at Patterson Park, how in practice the best results are obtained in plant growth, read a paper, from which we expect to give some extracts in our next. Mr. Pentland made a spirited little speech, bearing rather severely on the deficiency of floral display and taste in Baltimore as compared with some other cities; and the president, Mr. Perot, made some remarks on the adaptation of gloxinias, achimenes and similar subjects, to the ornamentation of the greenhouse in summer.

The prizes awarded were as follows:

Best collection of 12 plants in bloom, \$5, E. Hoen; second best, \$3, James Pentland; best table design, \$5, G. Burger; best basket of cut flowers, \$4, Miss Molly Strawbridge; best pair hand bouquets, \$3, John Cook; best hanging basket, \$2, W. H. Perot; best 12 Camellias, cut flowers, \$3; best 6 Camellia plants in bloom, \$3, James Pentland; best 6 Chinese Primroses, \$2, E. Hoen; best 6 Azaleas, \$3, W. H. Perot; best 6 Hyacinths in pots, \$2, W. H. Perot; second best do., \$1, E. Hoen; best 6 Cyclamens in pots, \$2, E. Hoen; second best do., \$1, James Pentland; best 6 heads Lettuce, E. Hoen.

Best 6 Hyacinths grown in glasses in window, \$2, W. H. Wehrhane.

The committee gave a special commendation to a seedling Carnation, "Waverly," shown by August Hoen, for its large and brilliant flowers, free-blooming qualities and great fragrance; to James Pentland for his seedling Camellia, "Stone-wall Jackson," exhibited for the first time, of good form and color and beautifully variegated; to W. D. Brackenridge for a specimen in flower of Mahonia Japonica; to S. Feast & Sons for cut Camellias, Roses, Pansies and White Hyacinths; to Captain Snow for fine display of Orchid blooms; to Robt. J. Halliday for a general collection, including a fine Pandanus Veitchii; and to Patterson Park (Wm. Fraser, Supt.) for a handsome and well-filled table, including notably well-grown specimens of Phajus Wallachi, Abutilons Johns Hopkins and Darwinii, &c.

The March meeting will be held on the 21st. The Annual Premium Lists will be ready in a few days. Great encouragement is offered window and cottage gardeners.

Norfolk (Va.) Horticultural and Pomological Society.

A called meeting held on February 8th was opened by some remarks from President Leighton, who said:

The call for this extra meeting is the most gratifying duty I have enjoyed since the organization of the society. Our scanty roll of membership has circumscribed our sphere of usefulness. The addition of 69 names this day presented is a guarantee of a willingness on the part of the citizens to convince not only ourselves, but those from abroad, that at no other point in the country does Northern and Southern treasures of Flora meet more harmoniously.

The superiority of our pears are recognized the length and breadth of the land.

The magnitude of our strawberry crop has been read with astonishment abroad.

As was remarked at our last meeting, this is almost an exclusively horticultural section, and rendered so by our peculiar market relations with the different receiving points, radiating in so many directions from this centre. To make a telling impress of what nature and climate has so lavishly bestowed upon us, we must sustain a spring and fall exhibition of fruits, flowers and vegetables. This can be speedily worked up to a point of attraction to persons from abroad as to bring more to the city than did the late Agricultural Fair. In this direction I invite your special attention.

Mr. Wm. Denby then submitted the names of sixty-nine gentlemen, who, on motion, were elected members of the society.

Root Pruning and Winter Protection of Fig Bushes.

Editors American Farmer:

Having cultivated the fig here for over 20 years, in which time I have never failed in getting a crop, I therefore feel justified in saying something in praise of a fruit which I believe if better known would be more generally cultivated.

I have seen the fig growing in warm climates where it stood without protection, and also in houses for its special cultivation, but no where have I seen it bear such abundant crops of fruit as under the following treatment:

From the 10th to the 20th of November we dig a trench around the bushes, cutting away about half the roots they have made the late season when the bushes are growing vigorously, and less where they are not so robust, bending down the branches to the ground in the form of a cross, and covering them with the earth from the trenches from 3 to 4 inches in thickness; and in spring uncovering them from the 1st to the 10th of April.

They bear fruit abundantly, ripening from the 1st to the 20th of July, and continue bearing until November, and later if not destroyed by frost.

Of about 24 fig bushes, each covering at an average an area of 18 feet in diameter, we have in one season sold 20 bushels of fruit,

besides supplying the table of my late employer, Johns Hopkins.

The following kinds have done best: Brown Hamburg, White Marseilles, Brown Turkey, Nerii and Castle Kennedy. With these kinds we have been able in some seasons to keep up a continual succession of ripe fruit.

The soil here is a poor gravelly loam, with clay subsoil, but needs no manure for figs. With other fruits we have no success unless we manure annually.

If I may take the liberty of giving a word of advice to the farmer and amateur, I would say, plant a fig bush, and in the fall root-prune severely, until you get short-jointed wood, and then it is possible with better acquaintance you may increase your stock.

So far as I know the fig is exempt from disease and insects in out-door culture.

WILLIAM FOWLER,
Gardener, Clifton Gardens, Baltimore Co.

Pear Blight.

Memor. Editors American Farmer:

As there is so much diversity of opinion among pomologists as to whether fungus is the cause of blight, I will state that having found a few weeks since a standard Bartlett and a Clapp's Favorite too far blighted to go through another season, I had them carefully dug up that I might examine as to the fungus at the roots.

The roots presented as vigorous bark from top to bottom as I have ever seen,—not a trace of fungoid or any other disease. Perhaps many, of fruit experience, would have passed these trees without observing their true condition, and wonder next spring or summer at the sudden change in the appearance of the foliage, sometimes taking place in a single night.

When the obstruction of sap by disease takes place it of course becomes the incipient stage of decay, resulting in the production of fungi at the roots. No matter how vigorous a forest tree may be, unless some germ of growth is forced out, fungi will immediately gather.

I have a plat of fifty Bartlett trees that have given me more trouble than a plat of nine hundred of same variety on similar soil and drainage and separated therefrom only by a carriage way. I am satisfied that the cause is the cultivation of the soil in root-crops fertilized with a compost of barn manure and muck.

I shall put this small plat in clover this season, having tested this method of treatment for the past five years to my entire satisfaction. I find the dwarfs require stronger soil than standards, the quince roots taking less range than the pear root for food.

I have been highly pleased with Clapp's Favorite, the above named one being the first I have lost of this comparatively new variety out of about three hundred trees, standards and dwarfs. It makes a vigorous dwarf, but requires severe heading back for three or four years, else the tree will be too straggling. Is more tardy as a standard in coming into bearing than the Bartlett. The fruit matures about ten days earlier than the Bartlett, very like it in quality, but is handsomer. Not being much known in

the market, mine are usually sold in New York as Bartlett's—a meagre compliment to the fruit. It must be gathered ten days before maturity, else rotting at the core will be the result.

The question may arise with some, if we cannot fertilize our trees with compost as above named, what can we do to keep our orchards in condition?

I am of opinion that we are near the safe side if we furnish what the chemical analysis of the wood, bark and fruit calls for. With this guide, we are safe in a compost of woods scrapings or muck, sweetened with lime, ashes and bone-dust.

I am trying the Leopoldshall Kainit as an additional ingredient, and would regard its use more valuable at points more remote from the coast.

With regret that I am unable up to this time to venture any solution of the cause of blight, I shall give it a vigilant watch, which is the duty of every pomologist, and perhaps some of us may unexpectedly find the key to this hitherto unsolved problem.

I have noticed but one form of blight in my orchard—this commences in the bark usually from one to four feet from the ground, while the top appears vigorous, and the heart wood also in good condition to pass up the ascending sap.

G. F. B. LEIGHTON.

Norfolk, Va., Feb. 1878.

Fruits for the Eastern Shore.

Our friend and correspondent Mr. J. W. Kerr furnishes the *Denton Journal* with a list of fruits suitable for his vicinity. He says:

As the planting season is close to hand, and the expense being no greater in properly caring for trees or plants of the best varieties than is the same for inferior kinds, it is a matter worthy of careful thought by all who contemplate planting even a single tree. I shall not encumber your columns with a lengthened list of all the varieties of more or less merit; but will only name a few of the leading kinds, the characters of which for the purposes named are well established.

APPLES.—*Six of the best summer varieties*, for either market or home use—Early Harvest, Red Astrachan, Early Ripe, Golden Sweet, Early Bough, Summer Queen.

Six of the best fall varieties—Maryland Maiden's Blush, Wine, Fallwater, Peach Pond Sweet, Fall Pippin, Ewalt.

Six of the best winter varieties—Gilpin, Nickajack, Shockley, Winesap, Mitchell, Tewksbury Winter Blush—(here I might name a dozen more kinds that would be equally as satisfactory as the above.)

PEARS.—*Standard*—ripening as named—Beurre Gifford, Osband's Summer, Clapp's Favorite, Bartlett, Seckel, Lawrence, Vicar of Winkfield.

Pears, dwarf.—Duchesse D'Angouleme.

CHERRIES.—Early Purple, Gov. Wood, May Duke, Black Tartarian, Grafton, Early Richmond, Reine Hortense.

PLUMS.—Wildgoose, DeCaradeuc, Minor.

PEACHES.—Here it is unnecessary to offer a list, as nearly every one living in this great Peach-home knows what he wants. I will only say

that among the quite early varieties, the Amsden is considerably larger than the Beatrice, and on that account more desirable. In planting an orchard, the only *safe* way is to plant a list of kinds covering the season from beginning to end,—then let the market change as it may and will, you are certain to hit it somewhere.

GRAPES.—Concord, for general planting, still hold the greater share of public favor.

If I were planting six varieties for home use, my choice would be Concord and Wilder for black, Martha and Goethe for white, Delaware and Iona for red.

STRAWBERRIES.—All things considered, the Wilson is still ahead.

BLACKBERRIES.—Wilson's Early, Dorchester and Kittatinny.

RASPBERRIES.—Brandywine for red, and Mammoth Cluster for black. J. W. KERR.

Eastern Shore Nurseries, Denton, Md.

Floriculture, &c.—March, 1878.

By W. D. BRACKENRIDGE, Florist and Nurseryman, Govanstown, Baltimore county, Md.

Greenhouse.

An unusual mild winter has so far prevailed, so that a moderate amount of effort has been called forth in bringing plants through it to land them in the lap of spring; and this must have reduced the attendant expense in the way of fuel.

Young gardeners and old beginners at the business are very apt to have a slight attack about the commencement of the month of what we will call a spring fever. That is, they will see a thousand things that require to be done, and spring right in to do half a dozen of them at once, performing none of them at the proper time and finishing none of them up before leaving. A regular plan or design is necessary in carrying on any work. Design, in this instance, means intelligence and skill, without which no one will ever prove a good cultivator; and much knowledge of the kind we here allude to may be found in horticultural periodicals, or by frequent visits to some one who is well posted in the profession, and then noting how he does, and to this may be added a close observation on the habit and character of every plant that comes under notice. We never believed that it was necessary, in order to make a good gardener, that he should be brought up from the cradle with a spade in one hand and a flower-pot in the other, or even go through the regular drill of an apprenticeship,—as we know some of our most expert growers were far beyond their teens before they joined the craft; neither do we think that there is much more knowledge to be found in a graduate from a king or duke's garden than there is to be found in a man who has all his lifetime been in small places, where he had an opportunity of putting his hand to all kinds of work. What is most wanted is a clear head and constant observation and application to business.

March may be considered the month when plants in the greenhouse give the most satisfaction, as then there is little out of doors to draw off the attention from them. The best advice

we can give is to admit a free supply of air on all occasions when the weather is mild, at the same time making free use of the syringe, so as to keep down the thrip and red spider; the supply of water given at the roots should be no more than what the roots will absorb, and to know this is perhaps one of the nicest points in plant culture.

Much of the fine effect that would otherwise be produced is destroyed, in too many instances, by unsightly stakes to which the plants are tied; in some cases we have seen stakes used that were more conspicuous than the plant they supported, and we have seen as many as twenty stakes used to hold up the head of a plant of *Chorozeria* variety. All hard-wooded plants should be so trained when young that when they flower their stems should be able to support their own branches, and if stakes are used at all, ought not to be higher than the plant itself; and to be in keeping with the surrounding object should receive a coat of green paint.

To grow specimen plants so that the individual kind treated may develop its finest qualities, is a branch of plant culture which few gardeners understand; or if they do, it is seldom practiced by them. We do not look for such specimens in commercial gardens, but in private establishments this feature should prevail.

Bouvardias that have done blooming should be cut back to cause young wood to be made, to be used as cuttings, or they may be propagated by roots, cut into pieces about one inch long,—these should be planted in light, sandy earth, and placed in a gentle bottom heat. The most popular kinds are *B. Davidsonii*, white; *Elegans*, salmon; and *Hogarth*, crimson colors.

Such decorative summer vines as *Passifloras*, *Bignonias*, *Clematis* and *Allamandas*, should now be pruned in and fresh potted; after which place them in a warm situation, but do not give much water until such times as they start freely into growth.

Young Ferns may readily be raised by filling a seed-pan up to within one inch of the brim with woods earth: on the surface sow the spores, *no earth cover*, then settle the whole with water, and place a pane of glass large enough to cover the whole pan. *Adiantums*, *Dicksonias*, *Lygodiums*, and other filmy kinds, come up freely in this way if kept warm, moist, and in a shady situation. The leathery-leaved kinds are more difficult to raise from spores, but are readily multiplied by division of the stock.

Azaleas should have a liberal supply of water when in bloom and while they are making their young growths; and when the latter has just about done growing, the wood is then in a good condition for both grafting and to use as cuttings. The Azalea we think ought to be more extensively grown than it is at present. No genus of plants is more gaudy, and it certainly is not difficult to cultivate; its greatest enemy is the Thrip, but this is easily subdued by tobacco smoke, or by water applied with the syringe.

Do not let the greenhouse get overcrowded with half-hardy bedding-out material; these should be moved out early into frames, as directed last month, so that space may be gained to show off to advantage the *Pelargoniums* and *Geraniums*, &c., &c.

Lawn and Pleasure Grounds.

Deciduous trees and shrubs may be planted as soon as the ground is dry; and if the specimens are large, the branches should be cut back and proportionately to the damage the roots has sustained in lifting. All large wounds made should receive a coating of pitch and tar, and stakes should be provided to support the tops. One plan consists in putting large stones around the tree, and they keep it steady and act also as a mulch to retain moisture. The effect, however, on the lawn is not good. The planting of evergreens had better be deferred till April or May.

Seeds of annual and other plants are sown with advantage in a hot-bed, directions for making which have been given heretofore. A cold bed for receiving the surplus bedding plants from the greenhouse is desirable.

Any bare or thin places on the lawn should have grass and clover seed sown on them, and the whole raked and rolled. Walks and roads should be put in order, the beds and borders dressed up neatly, and coverings of plants partially opened up to admit air and light.

Growing Violets.

For the past five years we have adopted a plan for growing Violets for winter blooming which differs in many respects from the common practice, and results in an abundance of bloom at less expense than the old method. Any time in April we cut from the old plants young runners with roots and pot them into two-inch pots, placing them in a shaded green-house until about the middle of May. They are then shifted into three-inch pots and set closely in cold-frames. The frames are covered with screens made of laths nailed about one inch apart, which furnish the necessary shade from our hot summer suns. The only attention given them during summer is to keep them watered, and the pots clear of weeds. About the middle of September we turn them from the pots and plant in frames six inches apart each way, first digging into the soil a liberal dressing of bone-dust. The lath screens are placed over them for a few weeks while the weather remains warm. About the first to middle of October the sashes are placed on the frames but not kept close until the middle of November, after which time we never move them except when gathering the flowers. No mats or any other protection is used except the sashes, and herein our method differs most materially from that in common use. Since we have discarded mats and shutters on violet frames we have never had any lack of bloom throughout the whole winter, and our observation during this and last winter shows that our bloom is much more abundant than with those who cover their frames nightly with mats. Our plants get all the light and sun, and during bright days the soil gets so thoroughly warmed that no frost of any consequence gets in. In using mats the glass will unavoidably get obscured with dirt and trash so that when uncovered they do not get the full benefit of the sun, and where a large number of sashes are in use it is always late before they are all exposed to the sun, and the covering must be commenced some time before the sun has left in

order to get through. Then again, in dark snowy weather the mats are apt to be left on and the frost creeps in around the sides of the frames, so there is sad havoc when opened again. Of course there are old fogies who will say this is all nonsense, but so long as I get more blooms without the mats I shall never go back to the old expensive system. Last winter was an uncommonly cold one, but I sold thousands of violets to men who could not get them from their covered frames. The plants kept during summer I find always give the earliest flowers in fall, and the risk of losing them in summer when planted out more than compensates for any extra trouble in watering, &c. In fact, we think it less trouble to keep them thus than to cultivate them outside, while the shade and water preserves them from the red spider, which is so destructive to them in summer. W. F. MASSEY.

Chestnut Hill, Feb. 4th, 1878.

Thoughts on some Popular Flowers.

As the time will soon be here when all lovers of flowers will be busy preparing for another year of buds and blossoms, a few remarks on some of our popular flowers will not be amiss. First, on

Dahlias from Seed.

The past spring, I sowed a few seed about the latter part of March, in a bed prepared the same as for a hot-bed; but covered with pieces of plank in lieu of a sash. As soon as the weather had sufficiently advanced they were transplanted to a rich flower border, where they grew very rapidly, and to my astonishment bloomed the last of June, for I was under the impression that they required two or three years to bloom from seed. The flowers of these seedlings were not what could be wished in regard to doubleness of bloom, which fault I attribute to the greater part of the seed not germinating, as it is said by florists that the seeds that will produce single or semi-double flowers are more robust and sure to grow than those that will produce double ones. This is written more to show that this justly popular flower can be grown very easily from seed, and will bloom almost as soon as plants bedded out at the same time. Culture same as for Balsams.

Flowers for the Million.

The following twelve varieties of popular annuals will give a good account the entire summer, if proper attention is given to culture: 1, Aster, embracing the entire list in its many varieties; 2, Balsam, the improved double kinds; 3, Dianthus, such as Hedderwigii, Laciniatus, Imperialis, &c.; 4, Nasturtium, the new Tom Thumb varieties; 5, Petunia, the choice show kinds; 6, Portulacca, both double and single; 7, Phlox Drummondii, this plant is pre-eminently the one for the million, succeeding admirably in all places and under the most adverse treatment, undoubtedly the finest annual in cultivation; 8, Eschscholtzia, for brilliancy this plant is unsurpassed; 9, Larkspur; 10, Verbena; 11, Ten Weeks Stock; 12, Zinnia. The above twelve plants should be grown by all who cultivate flowers. No extra treatment is needed in their cultivation, and the most inexperienced can grow them with ease.

I must not forget to mention that fragrant little annual, Mignonette, which of course needs no commendation from any one; suffice it to say that the old kind is as good with its modest name of Sweet Mignonette as any of the high-sounding ones. A few words to lovers of the so-called

Dutch Bulbs.

While you are making out your list for the coming fall be sure and include the little Roman Hyacinth, with its pure white single blooms; this is the earliest of all the hardy bulbs, blooming sometimes before the Snowdrop. At the present writing (January 21st) I have one in flower in the open ground with no protection whatever, and subject to some intensely cold weather. The most determined flower to bloom that I know of is the

Sweet Violet.

This plant will take advantage of even a few days thaw in dead winter, to put forth several of its intensely fragrant white flowers; in fact my violets bloom the entire winter without regard to temperature. I wonder if it is widely known how easy it is to winter geraniums, fuchsias, heliotropes, &c., in a cold pit. It is a much better way than keeping them in the house. At some future time I may give directions for making one. A few words, now, about some flowers that are lauded by florists as

Great Acquisitions.

First, there is the so-called *magnificent* Penstemon. Seeing it praised so highly in the catalogues, I was induced to buy seeds of "choice named varieties," and the plants were actually not worth the space they occupied; in place of the tube-shaped flowers of two or three inches long, there were a few scattering bells, a half or three-quarters of an inch long, and of the dirtiest red color imaginable, the only color produced in the whole lot; and another drawback was, the plants were infested with little worms which ate out the heart and caused them to die. Such plants as *Nemophila*, *Jacobia*, *Whitlavia*, *Gilia*, *Crepis*, *Clarkia*, &c., are not worth growing. I was quite disappointed in a "new and improved *Phlox Drummondii*," the "*Grandiflora*" varieties; I tried it the past summer, and to me there is not the slightest difference discernable between it and the old kind. In future I shall beware of "Novelties."

G. W.

Oakville, Warwick Co., Va., January, 1878.

Novelties in Floriculture.

What a knack the New York florists have for getting out "Novelties" in plants, and by the aid of wood-cuts and tinted paper selling them too. We have just been looking over the "Novelties" for 1878 in one of their catalogues. We find "*Klenia Articulata*" is a novelty of 1878. What would our grandmothers who grew the old "Candle-plant" (*Cacalia Articulata*) say to this. Two or three years ago we noticed an article in the *Gardener's Chronicle*, saying that the plant had entirely disappeared from cultivation. We had had it lying around the green-houses for years, taking care of itself, so we rolled up a plant and mailed it to Dr. Thurber, of N. Y., who we

know loves old things, and who hailed it as an old boyhood friend. Now, it is a "Novelty" with the New Yorkers, and is worth 50 cents a plant. Last year we catalogued and sent out a pure white *Ageratum* which has been in this neighborhood for some years. Now it is in this same catalogue as a novelty of 1878, with a brand-new name. Last spring we also sent out a fine *Verbena* under the name of "*Beauty of Oxford*;" now the author of this New York catalogue coolly puts our poor *Beauty* in "*Our new set of Verbenas for 1878*," without a word as to its origin. The beautiful *Begonia* "*Argyrostygmia Rubra*," of which we have written elsewhere, and which has been common in the Baltimore trade for years, and which was sold in Lexington market last spring, is another "Novelty of 1878," and worth \$1.00 a plant. It is well worth the money, however, to any one who has not had it.

Golden Bronze *Geranium* "*Harry Hieover*," we imported and propagated for three years and discarded it. It is now a first-class "Novelty of 1878."

And so on with two-thirds of the so-called "Novelties" which go to make up these attractive catalogues, and which Baltimoreans order when the same plants can be bought at home for one-third the money. The fact is that all the best plants catalogued can be bought at the floral stands in Baltimore markets, pot and all, for the same price they are sold at wholesale in New York. Not that New York prices are too high, but Baltimore prices are too low to afford reasonable profit to the growers, especially to those who have small places, as most of those who supply the markets have.

W. F. M.

Early Vegetables.

Messrs. Editors *American Farmer*:

Now that the song of the blue bird admonishes us that spring is approaching, it behooves those who wish to have an early garden to begin; so that when the regular spring work comes we may not be hurried, so as to neglect that vital part of all good and successful farming, viz: the vegetable garden. Bean-poles and pea-sticks can now be provided, and all trash raked off and burnt, or put in the stable-yard. And as I have never seen a farmer's family who objected to early vegetables, now is the time to get a hot bed under way. You have so often given directions about making hot-beds that it is superfluous for me to say anything about how they should be arranged. I think most hot-beds for early lettuce, cabbage-plants and tomatoes are made too hot. The seeds are invariably sown too thick, and the plants are not aired enough and grow too slender, and suffice the more when they are transplanted. If the seed are sown in rows about 5 inches apart, and when the plants get to be an inch high they are thinned out and the extra plants set out in a cool frame, the plants left in the hot-bed will grow strong and stocky, and are easily transplanted when the weather suits. Those in the cold frames will come on a little slower, but make good succession plants. Egg-plants and peppers require much greater heat to germinate the seed, and also for the growth of the plants. Very often the seed of these two

vegetables have been pronounced as worthless, when the cause of their failure was want of heat in the hot-bed.

C. H. S.

Harford Co., Md.

New Carnation "Peter Henderson."



Messrs. Nanz & Neuner, of Louisville, the introducers to the trade of the White Crape Myrtle and the Dwarf Pomegranate, Jas. Vick, have sent out another novelty in the Carnation here figured. It is claimed by them to possess most valuable qualities, especially in its free blooming habit, fragrance, and the great size, perfection, and durability of its flowers. It is said also to be equally good as a winter and summer flower, and a first-class bedding plant. This plant is being offered in this market, as will be noticed, by Messrs. Massey & Co.

The Vegetable Garden.

March.—The preparation of the ground, whenever its condition will permit, should now be attended to; but great care should be paid to its being in suitable condition. Nothing is gained by working the soil when wet. Abundant manuring is necessary to the best results in the garden, and the soil must be thoroughly pulverized. Continued stirring of the soil tends to earliness as well as enlarged yields.

Asparagus beds, not already cleared away, ought to have the tops cut off and burned, and a good thick dressing of well-rotted manure applied. An application of salt (say a pound to the square yard of surface) is an advantageous one. Bush Beans may be planted towards the end of the month; they may be killed, but the chance of success is worth trying for. Beets and Carrots for an early supply may be sown as soon as the ground can be worked. Cabbages and Cauliflowers may be planted out from the seed beds and cold frames; seeds sown for summer

and fall use. Celery seed may be sown; see valuable paper on the culture of this plant on another page. Lettuce may be sown in the border. Onion sets may be planted out for early crop. Peas should go in as soon as ground can be worked, for earliest crops, and for succession every ten days. Potatoes should be planted.—Rhubarb beds should have a dressing of manure, if not already given. Radishes may be sown in the borders, and Spinach in drills 16 inches wide.

Composts should be prepared, the hot-beds looked after, and winter crops carefully cultivated. A number of useful papers are to be found elsewhere on subjects pertaining to the vegetable garden.

Market Gardening.

Editors American Farmer :

The raising of "garden truck" for market has risen to considerable proportions in our country. As the great centers of population increase, the demand for more and a greater variety of vegetables, &c., &c., increases to keep pace with the growth. A considerable proportion of this increase is drawn from the country where vegetables, &c., &c., are grown, and consumed in greater or less quantities. Habits acquired in rural abodes, instead of lessening become more fixed, or rather make demands which will not be satisfied without an indulgence; and a temperate indulgence in fresh green vegetables, etc., not only gratifies the appetite but is conducive to health.

During the decade from 1850 to 1860, market products increased rapidly, as by government statistics I find the whole value to be \$5,280,023, and in 1860 the value rose to \$16,159,498. In market products, New York State produced the greatest amount in value in 1860, New Jersey second, and Massachusetts third; Pennsylvania, which in 1850 stood second, in 1860 rated as the fourth State in these products. California, which in 1850 was a young State producing only \$75,275, in 1860 was the fifth, producing \$1,161,855 in value; these five States producing something more than one-half the value produced in all the States. This may be accounted for in part, perhaps, as containing, or being in the immediate vicinity and easy communication with, the most populous centers of the Union and best markets. That such a business should have grown from the comparatively small beginning in 1850, in ten years only, would go to show in some measure its importance in an agricultural point of view, especially when we consider the comparatively small proportion of arable land profitably available for the culture of garden truck; the present value of these garden products I am at present unable to approximate, as I have not the statistics.

Market gardening to be economically pursued should have its location either in the immediate vicinity of a good market, or on the line of some rail or water communication, and within easy distance, as all truck is of quickly perishable nature, and can only be preserved fresh but a few hours. But it may be asked, may not this business be overdone? Undoubtedly it may be unless wisely directed; but that there is no dan-

ger of such being the case may be inferred from comparing present prices with those of 1850, and then it must be considered that consumption increases as the supply becomes more abundant and the variety is increased. We must also bear in mind that our populous centers are constantly increasing in number and inhabitants, and also that the area which can be economically devoted to this object is limited.

Before entering upon the business of gardening, there are several things to be considered: Not every one who may be advantageously situated, and supplied with other essential requisites, may succeed; a talent is required in knowing how to sell, without which early and good production is of little importance; foresight to know what varieties to produce, with constant untiring industry, is necessary to success. The constant supervision of the master mind is essential to see that everything is done, and done in just the right time, and as it should be; in order to do this, he should rise early and sit up late, and be constantly on the alert, doing with his hands while his mind is constantly active. Perhaps I could give no better description of the thorough garden proprietor than to say, he should have a perfect adaptedness to his business; and may we not say the same of every kind of business?

The proportionally most successful producers of garden truck are confined to small areas, a few acres at the most; *thorough* culture must be the rule; one man alone can successfully manage less than an acre, when devoted to the various products which go to make up the variety.

In locating a garden, a sheltered location (other things being equal) is the best where a choice is to be had, but more frequently this is not to be had. If the soil is not right, it must be made so by changing its constitution in some of the various known ways of draining, sub-soiling, trenching, mixing and manuring, etc. Almost any soil is capable of being improved by some of these methods. The intelligent gardener should make himself conversant with the nature and constitution of his soil, so that he may make any needed amendments to adapt it to his purposes, also the adaptability of soil to crop, and *vice versa*. The soil must be made deep and be well filled with plant food, so that the plant roots may find their appropriate pabulum at every step.

Provision must be made for an unlimited amount of manure and fertilizing matter, not only for one year but annually, so long as the business is continued; and the fertilizers need be somewhat varied and mixed; hot-beds and kindred appliances will be needed, as well as necessary tools, teams, wagons, etc., which will suggest themselves to the observing and thinking individual.

Worcester Co., Mass.

W. H. WHITE.

Celery Culture.

Editor American Farmer:

Celery is so delicious an esculent, that any information tending to lessen the difficulties of its culture, and assure an abundant supply of the best quality, might be thought welcome to the public.

Having obtained several successive crops of celery well worthy of being kept in the *back-ground* and eaten in private, and at last having secured a supply of the choicest kind,—large, solid, white as snow, crispy and delicious, that was sure of being praised whenever tasted,—I have concluded to give your readers (by your permission, Mr. Editor,) a little of my experience, and some suggestions by the way.

The first step in celery culture is to procure the seed. I have tried both the dwarf and the tall, and have been best pleased with the "Large White Solid," an ounce of which from any reliable seedsman should produce several thousand plants. Select for the seed-bed a shady place on the north side say of a stable, or any other spot protected from the mid-day sun; make the ground thoroughly rich and well pulverized, of soil that will not stiffen. Sow the seed about the 10th of April, in this region, and press down with your foot the soil in the rows over the seed. This is of much importance, thinks Mr. Peter Henderson, both in securing the young plants from being burnt out by the dry hot weather so frequent in May, and in giving the seed an earlier start than the weeds between the rows, so that the latter may be destroyed with the hoe as soon as they appear; while the celery plants will have made enough growth to be seen and avoided. Grown in the shade, the plants will advance rapidly and must be thinned out as they enlarge,—thus enabling you to spare a supply for some of your neighbors. Be sure to clip off the tops *once while growing*, to increase the number of branches or stalks; and to transplant once or twice, to secure a mass of fibrous roots.

While they are coming on, let us turn our attention to the ground where they are to be set out, and I would here remark that usually I have experienced great trouble in keeping the young plants alive during the first four or five weeks after being set out. They seem to be on the point of burning up, or dying out, let me water them as carefully as I might; and I have adopted two plans for the future: one of them is to make the ground where they are to be set as rich as possible with barn-yard manure *in the early spring*, and plant my potatoes there. The cultivation of this crop and the action of the earth and rains will thoroughly decompose the coarse hot manure and reduce it to the condition proper for feeding without burning the tender roots of the young celery plants. The other plan is, when the potatoes have been removed and the ground thoroughly plowed up and pulverized, and a trench made some 8 or 10 inches deep, at the bottom of which have been placed the richest strata from the potato-bed, but no fresh manure, and the young plants have been set therein about the 20th July, in rows about 6 feet long and a foot apart, and the plants at distances of 6 inches in the rows, to have the earth well pressed or *firmed* down with the foot around the plants. Shading for a few days is very good, and they must be watered for a while, too; but with no fresh manure applied to burn the roots, and the hot dry air excluded by the pressure till the growth has begun, and the cool nights of August coming on with their refreshing dews, the plants may be confidently expected to quicken up into

active growth and advance in their size almost from day to day.

One more point and I close. My usual custom has been the old, familiar method of hilling or banking up the plants as they grow. And the sure result has at the last appeared in the Celery when dug out in the winter,—blackened with rust, and more than half of the growth utterly unfit for the table. Taking Mr. Henderson again for my guide, last year I abandoned the hilling or banking-up system. The plants grew as they pleased, and spread themselves in every direction. When the 10th of December arrived they were still unprotected. We had had several hard freezes, and it seemed as if the Celery could never be reduced into shape or recover from the exposure. But a warm, plentiful rain set in; the frost was all washed out of the plants; they were unhurt, and could be straightened up and brought into order. The earth was then filled in around them, and a good thick covering of leaves soon after applied, and the crop left to bleach. It was ready for use at Christmas, and has been uniformly of the very best quality, as stated at the beginning of the article.

While some experts around me shake their heads and say this will never do, I accept the philosophy of results, and purpose to try the experiment again. R.

Lutherville, Md., Feb. 23, 1878.

Transplanting Vegetables.

A very experienced market gardener gives the following to the *Massachusetts Ploughman*:

This is one of the most important operations in gardening, and to accomplish it with certainty of making the plants thrive and receive as little check as possible in their thrifty growth requires the exercise of considerable skill on the part of the gardener. That they will receive some slight check is unavoidable and to be expected, and where the seed can as well as not be sown where it is to remain there is no advantage in transplanting. The cases, however, in which this can be done are much less common than where the plants must be moved once or twice before they reach the spot where they are to complete their growth.

The advantages to be gained by transplanting are many—the gain in time is one of the most important considerations in the highly manured and expensive gardens near the city markets. Most plants make slow growth at first, and require considerable care which can be bestowed upon them with greatest economy in a seed bed, or in a plant bed where large numbers of small plants can easily be tended and weeded in a small space. Another advantage to be gained by transplanting is the hastening of the maturity of the plant which is affected by the check given to the roots. It is customary for gardeners to transplant tomatoes three, and even four times, for the sake of hastening the maturity, among other considerations.

It must not be forgotten, however, that a recently transplanted plant is in a delicate and unnatural condition; its roots being disturbed cannot for the time supply the necessary sap, and if the weather should prove dry and windy there

will be danger from wilting. There are several ways of avoiding this danger: in the first place the soil should be carefully prepared and made as fine as possible, so as to prevent rapid drying of the surface; then the roots can be dipped in water as the plants are set and the earth firmly pressed around them. And if the leaves of the plant are very large and soft, it will be well to shorten them to avoid excessive evaporation. In transplanting under glass the conditions of light, air and moisture are so completely under control that there will be no need of any wilting with proper care given to watering and shading. In the open air we are much at the mercy of the weather, but by properly preparing the ground and transplanting in damp weather, if possible, there will generally be no great trouble.

There are some tools in common use among the gardeners for transplanting which facilitate the work very much. For setting plants thickly in a plant bed we use a marker represented in Fig. 1; it is made of pine wood, the teeth being set 2



FIG. 1.—HOT-BED MARKER.

or 3 or 3½ inches apart for various kinds of work. The head is long enough to reach across a hot-bed, or 5 feet 8 inches. When the loam is just damp enough and fine enough the holes for planting can be made with this tool so that the plants can be very rapidly set by hand by simply placing the roots in the holes made by the marker and filling round them.

For marking rows for setting out plants in the field a marker represented in Fig. 2 is used, with

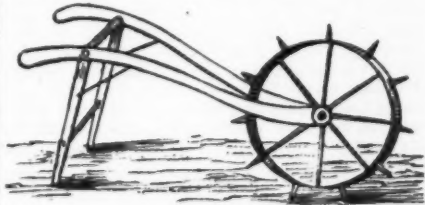


FIG. 2.—FIELD MARKER.

large wheel and handles somewhat like a wheelbarrow. The rim of the wheel is made of strong hoop-iron two inches wide, and the wheel is about three feet in diameter; the rim is provided with ½ inch bolts holes at various distances apart, so that pegs being bolted to the rim will mark the proper distances for setting the plants in the row; a man can handle this machine as fast as he can walk, and the advantage over any other mode of marking is very considerable.

Celery plants transplanted in very hot, dry weather, sometimes need watering once or twice after being set out. When this has to be done do it thoroughly, using water enough to wet down the ground to the roots of the plant, or little advantage will result. W. D. P.

THE ECHOFF TOMATO, advertised elsewhere, promises from its good qualities to be a desirable accession to the old varieties of that vegetable. It deserves a trial.

Home Department.

Away from Home.

Home and all its endearments, coupled with its contingent cares and anxieties, are left behind, and we are off for a little "outing." Nevertheless, while it is our nature to enjoy each moment as it adds miles betwixt ourselves and that loved spot, our thoughts revert in fellowship and sympathy to the house-keepers all over the land, and we wish that we might, through our pen and the *Farmer*, lend them our eyes and our appreciation to enjoy the varied scenery, and the spice of contact with the outside world. Such pictures and such thoughts do vary the monotony of housework and elevate the feelings even while peeling potatoes, dusting furniture, and renewing buttons. And though they do not teach the more practical truths, they reveal to us a little of the poetry of life, and we lay by a store of something which will renew our youth, and give an added interest to our every avocation.

No need to cross the treacherous ocean, and traverse the lands of the East for pretty landscapes, while so near to us, nestled among its native hills, lies the lovely little lake which supplies with water our own beautiful city of Baltimore. Look at it now through the frosty air of the early morning, seeming to embrace with its arms the hills which shelter it. How the shadows deepen and fade, and return again as the sun increases in vigor! How pretty the moss-covered stones and the grey grass look covered with a frosty spray; and the circling avenue of trees and neat fence surrounding the whole! Along the sides and atop the high hills how quiet and peaceful look the homes of other people, until the whole scene is roused by the shrill whistle of the locomotive, and then another piercing note tells us that from opposite directions are approaching the great engines which help to unite the extremes and keep as one the units of our broad land—while the steam and motion and white smoke, as it curls and wreathes above the trees, reflecting light and color, adds another charm to the picture.

And again, in the sequestered stillness of a N. J. farm house, who would dream of the enchanting beauty and even grandeur so close at hand, when abroad we hear only of its sands, and flats, and pebbly shores. But from the highlands of Union county come to us revelations of towns and cities with rivers and bays between, of islands and distant hills, of bridge piers and church spires, of fertile fields studded with woodlands and farm houses, of vessels showing dimly against the horizon, and railroads intersecting each other with marvelous frequency; until our senses are clogged with the immensity of the scene, and we fail to realize what our eyes embrace.

And then in the midst of the Great Metropolis how the hurry and confusion impresses us in contrast with the quiet and inaction of our country life. And from the Signal Service Station on top of the "Equitable Building," or from Trinity Church steeple, and along Broadway, that greatest of the great thoroughfares, to Cen-

tral Park—into the mazy labyrinths of Macys, Stewarts, Alsmans and others, how our thoughts are stimulated, and we go on wondering and amazed at the evidences of power given by civilization, genius and art, ranged in so small a space, to be witnessed in so short a time! The lessons here learned are not to be dissipated by weeks and months of obscure living, and the experiences thus quickly gained will repay the many privations sometimes to be undergone in order to possess them. T.

Home Arrangements.

Messrs. Editors:

Your correspondent "T" has most wisely, in the interest of health and comfort, appropriated the "largest," "sunniest" and most "cheerful" room in the house for the "living room," and where such a room is fitted up with care and an approximation to her ideal, it will undoubtedly be the most enjoyable one in the house, and in after years a scattered family will hold it among the happiest memories of home. If such a room should in many homes replace the established "Parlor," it would be a vast improvement. I trust I may be pardoned for promising to make a few more suggestions in regard to this *home* room. First, I humbly protest against the banishment of cigars and pipes from the mantel, unless an equally convenient basket is provided for them. If they have proper receptacles, they need not be unsightly; and they are so suggestive of man's comfort and liberty to enjoy himself in the midst of his family, that I like them in sight. A pretty lampholder always filled betrays a thoughtful care, and there is nothing nicer for the purpose than postal cards, which, having served their original purpose, are cut into narrow strips.

I will concede all the advantage claimed for the "coal stove" from "Thanksgiving" to "St. Patrick's day," but would never consent to any kind that would crowd out the old-fashioned open wood fire on the hearth during mid-seasons. There can be no substitute for such a fire during the spring and fall, and much of the half and half weather we are liable to even in summer. In malarious districts a fire in the open fireplace every morning and evening is one of the best precautionary measures that can be taken.

Another point I would like "T" and others of your readers to consider, *i. e.* the carpeting of this and other rooms in the house. We house-keepers are, as a rule, victims to too much carpeting. I am glad to see that "fashion" is leading in the right direction, and fast coming round to what has been my theory upon the subject these many years. Such a carpet as proposed (and a very sensible one it is if carpet there must be) would cost somewhere between \$30 and \$50, or more, according to the size of the room.

I contend that this money could be much better expended. One-fourth of it would make of most ordinary floors a pretty well painted and varnished one; if it is already a nice floor it will cost not over \$5 to stain it either in stripes or all one color, and then shellac-varnish it. With a pretty floor and judicious use of rugs, a room looks far richer and prettier than with twice the cost of them in carpets or matting.

A heavy rug in the centre of the room, from three to four yards square, or three by four if the room is longer than its width, and small rugs about by sofa, piano or sewing machine, and in front of large chairs, is really as comfortable and looks as much so as if the whole floor were covered.

Floors treated in this way are not only equally comfortable and pretty, but they have the advantage in cleanliness instead of that semi-annual bugbear of taking up carpets and house-cleaning. The house is always clean. These rugs can be so easily lifted and shaken, and the floor wiped (usually with only a large soft dust rag) and the ordinary occasional washing of windows and paint, and the room seems so nice and clean. I think the labor is much less than is required to keep a carpeted room supposably clean. It is hard work to sweep a carpet, and when the room is in constant use this has to be done every day. Where it is done, how much of the dust has settled back on the carpet, walls, curtains and furniture; in removing this, much of it goes back to the floor and remains there. I don't think the superior cleanliness of the rug system can be doubted.

There are many devices for making rugs suitable for these purposes, some of them almost equal to imported ones in beauty and durability. I hope some of your readers will favor us with directions for making them. I have seen and used those made from heavy body brussels carpeting, the widths sewed together to make them the required size. These can be bound with carpet binding or else have a border matching in quality and design, which are to be had with almost any carpet nowadays. Do not try any but heavy rugs; light ones or druggets are simply a nuisance.

CERES.

Papers on Window Gardens—No. 2.

Pittsburg and Alleghany are not cheerful cities. Their smoky atmosphere with constantly falling soot, the dingy look of all and the clouded atmosphere laden with blasts of furnaces and outpoured chimneys, impress a stranger unfavorably, and make him, despite the kindness of the people, long for the day of departure to clearer skies and healthful air. One evening toward dusk I was returning from Pittsburg to my boarding house in Alleghany. To shorten the distance I went through some of the poorer streets, where the dull frame houses in small rows told of the homes of workmen. I was not far from some of the great factories, with their ceaseless hum and clang of machinery, and the glimpses now and then of the river, yellow, muddy and swollen, with the piles of red brick, no longer red but dirty, made me think that the life of an artist, though there are many in the city, amid such unpoetical surroundings, must be peculiarly distasteful. For to have much of the ideal, in this extremely practical world with its hardness and selfishness, is not desirable. As I was musing my eye caught a bit of green,—bright, vivid, cheerful. At first only an impression, such as exceedingly near sighted persons are apt to receive before they make further observations. It came

from a very humble house, and I crossed the street to see what bulb or pleasant flower grew in the window. I caught, in doing so, a glimpse of the poorest but neatest of houses,—its gloom in that dim twilight only relieved by two bits of cheerfulness,—the red glow in the grate and the fresh green of—not a hot-house exotic nor imported Holland bulb, but a simple onion. If I had merely been told of the effect I should have doubted it; but standing there in the street full of distracting cares, and not in love, as many of us are, with the life others had chalked out for me, I can bear witness to the cheerful effect of the green of the poor homely onion. It reminded me of coming spring, of bursting leaves and blossoms, and of a possible spring in life, when some of its wintry clouds shall be lifted and its gloom lighted by sunshine.

A very simple occurrence has power to cheer a depressed spirit, a tiny thing to gladden the eye and refine the sense. A little pot of violets, an ivy twining round a picture, a flower in some favorite window, will all associate themselves with the events of the life that is there being worked out, and long be remembered. Life is hard, stern, cruel often at best circumstances, whatever we may say, to many irresistible. Intersperse therefore all the beauty, the poetry, the sunshine, you can. We need in our harsh struggle all the softening influences we can surround ourselves with. Who does not remember in his history some good counsel given so roughly that it jarred on our senses and feelings, which, had it been spoken in a tone of gentleness and concern, would have won us to wiser actions? And, if children love home little, may it not often be because it is so unattractive? Some of the most fashionable and ingenious places of resort in our large cities are such models of beauty and good taste that they might well be studied for effect alone.

JANE BOSWELL MOORE BRISTOL.

Recipes.

TOMATO SAUCE.—Take half a canful of tomatoes; put in a stew pan, adding half an onion, sliced, a little thyme, bay leaf, a head of celery, a tablespoonful of sugar, a tablespoonful of salt and one of pepper, a piece of butter the size of a large egg, and a small piece of ham; let these simmer slowly until the celery is tender, when add a teaspoonful of flower moistened, and a little cayenne pepper; boil five minutes, and taste to see if it is highly seasoned; strain through a hair sieve, and put back in stew pan until it adheres rather thick to the back of the spoon.

TO SUGAR OR CRYSTALLIZE POP-CORN.—Put into an iron kettle one tablespoonful of butter, three tablespoonfuls of water, and one teacupful of white sugar; boil until ready to candy, then throw in three quarts of corn, nicely popped; stir briskly until the candy is evenly distributed over the corn; set the kettle from the fire and stir until it is cooled a little, and you have each grain separate and crystallized with the sugar; care should be taken not to have too hot a fire lest you scorch the corn when crystallizing. Nuts thus prepared are delicious.

Health Notes.

CARE OF THE TEETH.—In the first place, the teeth should be picked and washed after each meal, so as to remove particles of food from their cavities and interstices. All persons should learn the habit themselves, and teach it to their children, when quite young, of brushing the teeth vigorously, both inside and outside, at least once a day. It is better to do so both night and morning, but at all events before retiring. It is also very desirable to employ some soft cleansing substance, in addition to the mere rubbing. Such are soap and precipitated chalk. But, in all cases, care should be taken not to use any preparation that feels harsh or gritty to the teeth, as all such are injurious.

SCALDS OR BURNS.—Instantly and liberally apply dry flour, and keep it in its place by a bandage. Another excellent application is fresh lard, that is, lard without salt. If only salt lard is at hand, wash out the salt in cold water. Do not apply cold water, salt, spirits, or vinegar. If the burn be in the leg or foot, slit the stockings, so as to avoid breaking the skin.

TO CURE HOARSENESS.—Beat well the whites of two eggs, add two tablespoonfuls white sugar, grate in half a nutmeg, add a pint of lukewarm water, stir well and drink often. Repeat the preparation if necessary.

NOTE FROM THE EYE.—Take a horsehair and double it, leaving a loop. If the mote be seen, lay the loop over it, close the eye, and the mote will come out as the hair is withdrawn. If the irritating object cannot be seen, raise the lid of the eye as far as possible, and place the loop in it as far as you can, close the eye and roll the ball ar and a few times, then draw out the hair; the substance which caused so much pain will be sure to come with it. This method is practised by axe-makers and other workers in steel.

The stings of insects may be relieved by applying a little spirits of hartshorn, or by putting on a poultice of moist clay.

Agricultural Education Abroad.

Editors American Farmer:

I find among a mass of memoranda, made several years ago to guide me in my professional duties, an account of an Irish agricultural college which I think will be of interest to your readers. They have learned through your columns what we pay to have an agricultural college; and with what precision the stream of public bounty is diverted from its channel. I now propose to show them what it cost and how it was done in Ireland thirty-five years ago—the description from which I made my notes having been written in 1842.

The Agricultural Seminary of Templemoyle was founded in 1827 by the Northwest of Ireland Society. Some fourteen thousand dollars (just the State income of our college) was subscribed, and with this the buildings were erected. These are spacious, simple and comfortable, comprising a

good stone house, airy dormitories and school-rooms, and large and convenient offices and out-buildings. For some years the school had a hard struggle for existence, but in 1842 it numbered seventy scholars, ranging in age from 12 to 31 years, and was in full and successful operation. It rented the land it cultivated, owning only the building site. The school is conducted on the manual labor system. The pupils are divided into two sections which alternate with each other, spending half of the day in work and half in study. In this way all the labor of the farm is done, only two or three experienced farm hands being employed. In harvest and other seasons, when necessary, both sections spend the whole day in the field. In winter or wet weather, on the other hand, almost all the time is devoted to study. The pupils receive a thorough English education, and are well grounded in arithmetic, mathematics and the sciences. Those who show taste or capacity in that line are taught draughting, &c. In the farm work-shops they learn the practice of various mechanic arts.

The fare provided for them is plain but plentiful and substantial, and is not wanting in variety, as evidenced in the published dietary. The state of discipline is described as admirable, the greatest attention being paid to the morals of the youths.

And now, what do you suppose all this costs? Each student pays \$45 per annum,—from this and the profits of the rented farm cultivated by them all expenses are defrayed. There are no government appropriations, no endowments and no other sources of revenue. We may add here that the college farm is described as a model in point of culture, and is equipped with first-class stock and implements. Is not this a complete demonstration of the possibility of success with such a system of agricultural education as I sketched in a letter to the *Farmer* last summer, and which is substantially the same as that proposed by you and that recommended by Mr. McHenry?

I do not propose to discuss our college in *extenso* here, but I wish to show in this connection what it costs us per head to educate our students. Seventy students at \$200—\$14,000; State and government endowment \$13,300; interest on stockholders' and State investments in buildings, farm, &c., \$6,000—total \$33,300. That is, the Maryland Agricultural gives its students an ordinary high school education, with none worthy of the name in agriculture, at a cost of \$475 per annum. If we add to the sum paid by the pupils in the Irish college the interest on the prime cost of buildings, &c., the cost of educating each one is \$57— $\frac{1}{2}$ of what we pay to have the thing not done, or so ill done that it were better let alone.

I presume that after going over these facts every reader will ask, if this can be done in Ireland why not in Maryland? It can be. But it never will be done until those most interested, the farmers of the State, resolve to enforce their right to have the agricultural college (which was founded and is supported for their use) managed so that they may derive some benefit from it.

HOBART HUTTON.

The American Farmer.

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Advertisements should reach us by the 27th of the
month, to secure insertion in the succeeding issue.

MARCH 1, 1878.

Clubs for the Farmer.

We hope our friends will not discontinue their
kind offices on behalf of the *Farmer*, but as
opportunity offers enlarge such lists as may have
been already forwarded, or make up new ones.

Additional names to clubs already forwarded
may be sent in at any time during the year at
the club rate.

We shall take it as a great favor for our pre-
sent subscribers to give us now what effectual
aid they can in extending our circulation, before
the busy season begins in earnest.

WITH the advertisements in our supplement,
offering certain articles at prices stated to be
very low, we have no connection whatever. The
form adopted is designed to attract attention, and
the advertising agent from whom we received
them assures us the offers made will be fulfilled.
Further than that our readers must act upon
their own judgment.

DR. SCOTT, whose card will be found in our
advertising pages, we can confidently recom-
mend, after personal experience of his work, as
possessing the highest skill in his profession, and
those requiring the services of an accomplished
dentist will do well to avail of his.

READ THE ADVERTISEMENTS. They are an
important and valuable part of the paper.

Legislative Matters.

The bill of Mr. Mitchell, of Baltimore city, for
the inspection of fertilizers, after having been
favorably reported by the Committee on Manu-
factures of the House, was referred to the Com-
mittee on Inspections, which reported against it
and thus gave it its quietus.

The inspection of tobacco is still under consid-
eration, and the impression gains strength that
no material changes will be made in the present
system, except, perhaps, the abrogation of so
much of the law as imposes a penalty of \$300 for
the shipment of tobacco from the State without
inspection.

The bill for the erection of an elevator to
accommodate Maryland water-borne grain, and
a contiguous pier for fruits, vegetables, &c., will,
it is believed, be lost. It was proposed to build
the elevator and pier by the sale of bonds for
\$500,000 issued by the State, and to provide for
a sinking fund and for current expenses by
requiring all grain coming to Baltimore to be
weighed by State officers and taxed therefor one-
quarter of a cent per bushel. The city grain trade
and millers opposed the bill, and considerable
antagonism to it was developed in grain-growing
counties of the Western shore.

The fate of the bill introduced for the estab-
lishment and maintenance of an Agricultural
Experiment Station probably depends on the
settlement of vexed questions touching the
State's revenue. If anticipated embarrassments
are escaped, the much-desired institution may be
set up; otherwise not. An argument used against
it is, that the State already contributes liberally
to the Agricultural College. Should this prove
potent, the farmers of the State may have that
superfluous institution to thank for the defeat
of a measure promising incalculable advantages
to their class.

The College's application for additional appro-
priations was probably only a diplomatic essay
to save, by asking a great deal, their regular
donation, and we believe is not being pressed.

Inspection of Fertilizers.

Mr. Carter, in his communication on page 85,
thinks, if it is to be inferred that we oppose any
law regulating the sale of commercial fertilizers
to the farmer, that our position is untenable.

While we agree with him that the physical ex-
amination of fertilizers fails to give any indication
of their composition and value, and that therefore
there is more argument for governmental inter-
ference in their sale than in that of commodities
whose qualities are more readily discernable,
yet we think the practical difficulties in the way

have not been met by any law enforcing inspections and affixing penalties for inferior articles or fictitious analyses. The law here is the same in substance as that Mr. Carter favors, and it is a dead letter. The burden of proof rests upon the farmer, and in legal fights, all know how divergent is the testimony of chemical experts. Former laws in this State failed to protect the consumer or to benefit any one save the officials who drew the fees.

In the place of such objectionable laws, we prefer a resort to the German control system by which the manufacturer and seller, and the buyer and user, by mutual and voluntary agreement, establish an umpire between them, such as are afforded by the Experiment Stations so numerous in that country.

Reduction of Grange Fees.

The Ohio State Grange, which has just held its annual session, ratified the amendment to the constitution proposed by the National Grange, reducing the minimum initiation fee to subordinate granges to three dollars for men and one dollar for women. This grange completes the number necessary to make the amendment effective,—so that as soon as the result can be officially announced, the new law will be operative. It is believed that the result will be large additions to the Patrons.

The Agricultural College.

The *Marlboro' Gazette* has been publishing a series of letters from Mr. B. Maurice, formerly a professor in this institution, giving some facts in its history. The past reports of the president and faculty have not been marked by perspicuity or candor, and the statements here made seem to clear up some points obscured by their treatment. This is the second instance where a professor in the college, who has been superseded, has given the public some surprising information as to its management, methods and discipline. It will be remembered that it was Prof. Worthington who showed, in a letter published after his removal, that although the catalogue for an entire year contained the names of only seventy-six pupils, *thirty-seven* of them were boys being prepared for the United States military and naval academies; and that during the same session the agricultural community of Maryland furnished *but seven representatives*.

The letters of Mr. Maurice are of great length, and we can give only some detached extracts, as bearing upon the condition and usefulness of the college—subjects which are now receiving attention from the proper committees of both houses of the Legislature.

We have no acquaintance with and have never seen Mr. Maurice, but as his statements are given a prominent place in a highly respectable journal

published in the county in which the college is located, and he invites the committees on education of the Legislature to call him before them to substantiate what he says, they deserve notice:

"The truth is that the naval students at the Agricultural, 1st, have ruined for many years to come the discipline of that College and its efficiency as an agricultural institution; 2d, they have in no way contributed to the paying off of its debt."

"Those who judge of the 'middies' in embryo by the corps of officers of the American navy would commit an egregious error." * * * *

"Even the Professor of Agriculture (?) is a colonel and an ex-cadet of West Point, who, having only a few agricultural pupils, not a dozen, devotes one hour and a-half every week to teaching 'what he knows about farming,' whilst, on a more congenial ground, he devotes *every day* one hour and a-half to teaching arithmetic and geography, also spelling, to the boys preparing for the Naval School. Another part of his time was taken as Instructor in Military Tactics and as Registrar." * * * *

"Add to this that our future commodores outnumber, three to one, the few students who, *rari nantes in gurgite vasto*, came to that college, deluded by its title, with the hope of being taught practical and scientific agriculture." * * * *

"Being aware of the strict, severe discipline to which they are about to be subjected, and knowing it is their last chance to sow their wild oats, to play all the mischief an American boy is capable of, they mean to make good use of their stay at the Agricultural."

"The Maryland boys who happened to come there with the hope of learning something about agriculture and who constitute a small minority, are their first victims.—They heap upon those unfortunate sons of our farmers—those contemptible 'clod hoppers,' as they call them,—all the sneers, insults and outrages they can. They *haze* them unmercifully."

[We have in our possession a statement made by a former student which fully bears out this statement, so far, at least, as he was concerned.—*Ed. A. F.*]

"Some of my readers, puzzled by the opening and closing sentences in the extract, heading my letter ('We have *nine* boys preparing,' &c., and 'these extra fees have paid the Professors' salaries,') will be at a loss to understand such arithmetic from a professor of mathematics. For, nine boys multiplied by \$250 extra fees, give only \$2,250, not \$8,000. Besides, they marvel why so much 'fuss' should be made about *only* nine boys."

I can give the key of the problem to the uninitiated:

The storm of last year being over, the 'policy' is now to conceal from the public the real number of navy boys. Hence that number of *nine*.

But the average is over *thirty* per year, not nine. Professor Worthington publicly stated they were thirty-seven at a time.—In fact, *all* the 'cadets' belonging to other States and several belonging to Maryland and to the District, are drawn to the Agricultural College, by 'special' printed circulars, advertising a 'Preparatory

School for the Army and Navy,' with the usual array of testimonials in favor of its head from noted naval officers.

These 'special cadets' aggregate fully half the whole number of pupils. Let us say they aggregate thirty-two. Thirty-two boys multiplied by \$250 give precisely the correct figure of \$8,000 extra fees.

But, then, how to explain the fatidic number of nine? It is most easy, candid reader:

The examination of candidates for admission as cadet midshipmen invariably begins on the 5th of June and ends on the 15th of same month. Now, it is obvious that, since the "special class" must be at Annapolis on the 5th, they cannot be at the College on the 6th of June, date of the *Report of Capt. Parker*! The wonder is that there are even nine remaining on the College grounds.

Now, it is clear that the College pays the Faculty with its *own fund*; that our State derives no pecuniary benefit from the presence of the navy boys? But, on the contrary, gives them 'a special instruction' that taxes all the 'energies of mind and body' of the professors? And, what does she receive in compensation? The scorn and sneers of these "specials;" the persecution of her sons who venture there; the ruin of all discipline for years to come, at least as long as a navy officer shall preside over the destinies of an *Agricultural College*; and an army officer occupy the chair of agriculture.

This is 'quod erat demonstrandum.' If I am wrong in my statements and conclusions, let the President contradict them; or, better, let the commissions [committees] on Education in both branches of the Legislature call to account both of us together, Capt. Parker and my humble self."

Kind Words for the Farmer.

Messrs. Editors:

YOUR AMERICAN FARMER is highly appreciated here. In making up my club, I asked one of your old subscribers if he was going to renew his subscription to the AMERICAN FARMER. "Yes," says he, "consider me a subscriber as long as I live." Those who are familiar with the good things it contains, say they cannot do without it. They can practice the good things it teaches. Its precepts and examples set forth are adapted to our soil and climate. I wish I had a larger club for you, but hope to add to it in the future. All I can say is, I bid it God speed.

Truly yours,

Laurel, Del., Jan. 21, '78. T. W. RALPH.

C. O. H., Kinston, N. C., writes: "Accept my gratitude for the efficient manner in which you have managed the *American Farmer* in the past, and my earnest wishes for a continuance in the same manner. There is no loss of interest in the success of this valuable magazine."

W. H. B., Prince William Co., Va., writes: "I have mentioned the *Farmer* within the past two months generally to our neighbors, but find that most of them are subscribers to it; indeed, I scarcely know one who pretends to read that is not a subscriber to it."

R. D. R., Hickman Co., Ky., says: "I think the *Farmer* the best agricultural periodical I have ever seen, and I have seen the most of those published in the United States."

W. H. D., Granville Co., N. C., says: "I can't well do without the *Farmer*. I commenced taking it about a quarter of a century ago, and expect to take it as long as I live."

H. G. H., Louisa Co., Va., writes: "There is no paper we prize as we do the old *American Farmer*: the older it grows the better it gets."

F. A. H., Madison, Fla., writes: "Please never discontinue my subscription unless I write to that effect, as I expect it to be my lifetime companion hereafter. Your magazine needs only to be read to be appreciated by all farmers, whether they reside North, South or West. I think I will get you some more subscribers soon."

W. T. R., Fairfax Co., Va., in sending a club of subscribers, says: "All are old subscribers, except one who was formerly a subscriber, but not last year. He says he cannot do without his old friend *The American Farmer*."

From many gratifying notices from our brethren of the country press we take the following:

"The sterling and indispensable Maryland agricultural journal."—*Havre (Md.) Republican*.

"This old journal fully sustains its high and well-earned reputation."—*Amherst (Va.) Enterprise*.

"Tillers of the soil should have this valuable journal to consult."—*Moorefield (W. Va.) Examiner*.

At a meeting of Fairlee Grange, No. 8, Kent Co., Md., held on the 16th inst., the following was unanimously adopted:

Resolved, That Fairlee Grange return their thanks to Bro. W. B. Sands, editor of the *American Farmer*, for his kind offer in placing at the disposal of the Executive Committee two hundred copies of the proceedings of the fifth annual session of the State Grange for distribution to the Subordinate Granges, and that this grange recommend to P. of H. the *American Farmer* as a first-class agricultural journal, and that a copy of this resolution be forwarded to the editor of the *Farmer*, under seal of the grange, signed by the secretary.

THOMAS O. HULME, Secretary.

Fairlee, Kent Co., Md., Feb. 22, 1878.

Floral and Fruit Magazine.

This candidate for public favor, published by Col. D. S. Curtiss at Washington, D. C., at \$1 a year, is very neatly gotten up and contains horticultural matter in great variety. Its editor promises occasional contributions from Messrs. Wm. Saunders, of the Department of Agriculture, and Wm. R. Smith, of the Botanical Gardens, besides other experienced horticulturists. Washington, as it seems to us, ought to support a periodical of this character.

By an oversight of the printer he failed to drop Dr. Woods' advertisement of the public sale of trotting horses, which took place on the 20th ultimo, and is reported elsewhere in this number.

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Baltimore Markets—March 1.

Quotations given below are Wholesale Prices.

Breadstuffs.—Flour—Steady, with a moderate business. We quote: Howard St. Super, \$3.75@4.25; do. do. Extra, \$4.75@5.25; do. do. Family, \$5.50@6.50; Western Super, \$3.75@4.25; do. Extra, \$4.75@5.25; do. Family, \$5.50@6.50; City Mills Super, \$3.75@4.25; do. do. Extra, \$4.50@5.25; do. do. Rio brands Extra, \$6.50; Spring Wheat Flour, \$5.50@6.50; do. do. patent, \$6.75@7.75; Patapaco Family, \$8; do. Extra, \$7.75; Germania Family, \$8; White Plain Family, \$7.50; Bridgewater Family, \$8; Belmont Family, \$7.50; Haxall Mills patent Family, \$7.50; Cape Henry Family, \$7.75; Chesapeake Extra, \$7.50; Fine, \$2.75@3.25; Rye Flour, \$3.50@4; Corn Meal, City Mills, \$1.75@2.

Wheat.—Dull and rather heavy. We quote Maryland and Virginia red, \$1.15@1.33; do. amber, \$1.24@1.35; Pennsylvania red, \$1.31@1.32; Western No. 2 do. \$1.30@1.33; Western No. 2 do., April delivery, \$1.33.

Corn.—Dull and heavy, with quotations as follows: Southern white, 52@54 cents; do. yellow, 53@54 cents; Western steamer spot, 47½ cents; do. mixed, spot, 54 cents; do. do. April delivery, 55 cents; and do. do., May delivery, 55½ cents.

Oats.—Quiet and rather heavy. We quote Western mixed, 32@33½ cents; do. bright, 34@34½ cents; Southern, fair to good, 32½@34 cents; do. prime, 35@36 cents; and Pennsylvania, 34@34½ cents.

Rye.—Quote good to prime at 60@62 cents, with the offerings light, and the market dull.

Cotton.—Steady and active. Middling, 10½ cents; Low Middling, 10@10½ cents; Strict Good Ordinary, 9½@9½ cents; and Good Ordinary, 9½@9½ cents.

Provisions.—Dull and heavy. We quote Bulk shoulders, packed, new, 4½ cents; do. C. K. Sides, 6½ cents; do. L. C. Sides, 6 cents; Bacon Shoulders, 5½ cents; do. C. R. Sides, 6½ cents; do. Hams, sugar-cured, new, 10½@11 cents; Lard, refined, trols, 8½ cents, and Mess Pork, 7½@8½ cents.

Produce. For articles named we quote as follows: Apples, N. Y. State ½ brl., \$5.00@5.50; Beans, N. Y. medium, ½ bus., \$1.80@1.95; Peas, black-eye, ½ bus., \$1.30@1.40; Peas, green, ½ bus., \$1.25@1.35; Onions, ½ brl., \$3@3.25; Potatoes, Early Rose, ½ bus., 60@65 cents; do. Peerless, ½ bus., 55@60 cents; do. Main Carters, 40@50 cents; do. Sweet, ½ brl., \$2.25@2.75; Beeswax, ½ lb., 25@26 cents; Ginseng, ½ lb., \$1@1.10; Seneca Root, ½ lb., 60@62 cents; Virginia Sanku, ½ lb., 10@12 cents; Tallow, country, ½ lb., 7@8 cents; Soap, country, ½ lb., 4@4½ cents; Feathers, ½ lb., 40@45 cents; Hides, dry country, ½ lb., 13@15 cents; Broom Corn, ½ lb., 4½@7 cents; Sheep's Pelts, each, 50 cts. @ \$1. Eggs, 14 cents ½ doz. for fresh.

New Advertisements.

F. H. Wilson.—Asbestos Paints and Roofing.
R. M. Hall.—Real Estate Exchange.
J. Clark.—Recipe for Preserving Fruits.
J. M. Rhodes & Co.—Standard Manures.
J. Horner, Jr.—Bone Dust, Bone Flour, &c.
Thos. C. Price & Co.—Victor Fertilizer.
W. W. Woodward.—Virginia Lands for Sale.
Wm. Parry.—Pomona Nursery.
Jas. J. H. Gregory.—Pedigree Onion Seed and Potatoes.
Jas. J. H. Gregory.—New Book for Farmers.
Wells, Richardson & Co.—Perfect Butter Color.
Pulliser, Pulliser & Co.—Architects.
Robt. Turner & Son.—Bone Dust and Poudrette.
Robt. Turner & Son.—Peruvian Guano.
A. Brackenridge.—Plants, Flowers, &c.
D. E. Williams.—Shirt and Drawers Making.
Quinn & Duncan.—Carriage Manufacturers.
Chas. B. Wise.—Light Brahmas and Partridge Cochins.
Dr. J. Emory Scott.—Dentist.
Chas. W. Hamill & Co.—Silver-Plated Ware.
W. E. Thornton.—Lardue's Bitters, &c.
Canby, Gilpin & Co.—Vegetable Liver Pills.
Linton & Lamott.—McCormick Harvesting Machinery.
Griffith & Turner.—Farm Machines, Seeds, &c.
Elhwanger & Barry.—Trees and Plants.
Linton & Lamott.—Geisler's Separators and Horse-powers.
W. Atkinson.—Seed Corn.
A. B. Echoff.—New Echoff Tomato.
James Vick.—Flower and Vegetable Seeds.
Jno. W. Kerr.—Grape Vines, Trees, &c.
R. G. B.—Farm Wanted to Rent.
W. H. F.—Situation Wanted as Manager.
Joshua Thomas.—Buckeye Mowers, Engines, &c.
Thos. Norris & Son.—Implements and Machinery.
Chemical Co. of Canton.—Fertilizers.
Eagle Gold and Silver-Plating Co.—Plated Ware.
American Art Union.—Engravings.

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THE CHEMICAL CO. OF CANTON.

**Where and How Our Famous Fertilizers
are Made Important to Farmers and
Planters.**

The Chemical Company of Canton, manufacturers of chemicals and fertilizers, are the largest and best representatives of that great interest in the United States. This Company is one of the institutions to which Baltimore is indebted for all the benefits which have accompanied the development of fertilizer manufacture and the building up of what is now one of our most important industries. The Company has always been progressive, and its liberality and enterprise in encouraging scientific research and experiment in this useful, practical field, have led to important and valuable discoveries. At the same time its management has been controlled by gentlemen of the highest standing in commercial life: hence, its operations have never brought discredit upon the trade or loss to the agricultural community. The Company is a wealthy corporation, doing an immense business and drawing its patronage from all the Atlantic and Gulf States. It enjoys the highest reputation throughout all sections of the country tributary to Baltimore, and is in every respect a first-class business establishment.

The works of this Company are located at Canton, and are very extensive. The buildings are substantially constructed of brick, and cover an area of two and a quarter acres of ground. The entire establishment is equipped with the most modern and approved machinery and appliances known to this branch of manufacture, and is divided into departments, so that all the processes of the business are conducted with the utmost method, accuracy and success. The whole work is so admirably systematized that

the best results are attained with the least waste of labor or material. The Company has spared no pains or expense to secure the production of the best fertilizers at a price which will commend it to the trade and to the farming community.

All the departments are under competent and experienced supervision, the entire business being conducted under the management of Mr. B. N. Baker.

The fertilizers and chemicals manufactured by this Company have been subjected to thorough analytical investigation by the most eminent American chemists, and have elicited the highest commendation. Many leading farmers and planters in different States have used the fertilizers of this Company exclusively, and regard it as unequalled and unapproachable.

In explanation of the exceptionally high character that the products of this establishment have always borne, it is important to state that *the Company manufacture only by formula given to them by their patrons, and are certain, therefore, to produce an unadulterated article at all times.*

Another special feature of this Company's business is worthy of attention. They manufacture fertilizers to order, according to any formula desired,—thus enabling a farmer to secure precisely the article best adapted to the condition of his lands or his system of planting. This is an important feature of the Company's business, and meets the wishes of many patrons. Their facilities for filling orders according to special formulas are unequalled.

The operations of this Company are very extensive, and their goods are sold in immense quantities, and shipped to all parts of the South. Some idea of their transactions may be gained from the fact that the works at present consume six tons of coal and eight thousand pounds of brimstone daily, while the consumption of chemicals, acids, etc., is proportionate. Last season the works were taxed to the utmost capacity, and were insufficient to meet the demand made upon them. The orders for the season just commenced indicate a marked increase over the demand last year, and, in order to meet it, a large addition to their main building is being constructed and will soon be complete. The track and wharf facilities at the works are excellent, and afford every advantage in loading for shipment by rail or water, without any loss by tearing or wastage. The office of the Company is at No. 15 South street, and is connected with the works by private telegraph.

*

P. O. box 231.

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Offers a rare chance to SELL or TRADE
OFF your REAL ESTATE.**CITY LOTS!****HOUSES!****FARMS!****LANDS!****BOUGHT AND SOLD.**CITY PROPERTY WANTED in exchange
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WELLS, RICHARDSON & CO.'S PERFECTED BUTTER COLOR is recommended by the agricultural press, and used by the very best Dairymen in this country. Harris Lewis, L. B. Arnold, O. S. Bilas, L. S. Hardin, A. W. Cheever, E. D. Mason, and thousands more. It is far better than carrots, annatto, or any other color, at one fourth the cost, and no work to use. It gives a pure dandelion color, and never turns red or rancid, but tends to improve and preserve the butter. A 25-cent bottle colors 300 pounds. Warranted to add 5 cents per pound to its selling value. Ask your Druggist or Merchant for it, or if you would like to know what it is, what it costs, who uses it, and where you can get it, write to

WELLS, RICHARDSON & Co., Props, Burlington, Vt.

POMONA NURSERY

100 acres of Trees, Vines and Plants. Best Strawberries, nine inches; Raspberries, three inches around. Ten acres yielded \$1,335. Send for price-list free. 40 YEARS Among Small Fruits, telling what and how to plant. Sent post-paid for 20 cents, or free to every purchaser. WM. PARRY, Cinnaminson, N. J.



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SEED CORN. Sent Postpaid for facts. First Premium, Pa. State Fair, 1894. Yield 100 bushels; 40 yrs. old. W. A. Hinson, 214 Arch St. Phila. Pa.

A NEW BOOK FOR FARMERS.

"Carrots, Manzolds and Sugar Beets. What kinds to raise, how to raise, and how to feed." By mail 30 cts. Also, my three works, on "Cabbages, and How to Grow Them," "Squashes, and How to Grow Them," "Onions, and How to Grow Them." Full of just such minute details as farmers want. Each, 30 cents, by mail. My large illustrated Seed Catalogue free to all.

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BONE DUST, pure fine ground bone, prepared for the drill, containing 4 per cent. Ammonia and 50 per cent. of Bone Phosphate.

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Manufacturers and Dealers in all kinds of

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Best fowls for the farm—very large, hardy and handsome. My stock won premiums at Baltimore in 1876 and 1877, also at Indianapolis in 1878. Chicks and eggs at moderate prices.

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A patent that will enable any one to produce new potatoes, ripe fruit, &c., all through the winter, nearly as cheap as in their ordinary season, will be given to "responsible" farmers for one-fourth of the proceeds for seven years, and afterwards free. Address, with two stamps to pay return postage, J. CLARK, P.O. Box 1571, New York.

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Are prepared, with great care, from medical plants, are coated with sugar that they may be taken by the smallest child and upon the most delicate stomach; are intended especially to act upon the liver—thereby relieving all such diseases as COSTIVENESS, HEADACHE, PARALYSIS, DYSPEPSIA, COLIC, JAUNDICE, and all diseases of a BILIOUS origin. No better evidence can be offered in favor of these Pills than the very fact that where their ingredients are known to family physicians, they are using them in their private practice. We append the following from one of our most prominent physicians:

OAKLAND, June 22, 1869:
DR. GILPIN—After carefully examining the formula of your Sugar-Coated Pills, I feel it but justice to say, that the combination is certainly perfect, and comprises the only remedies I ever believed were the proper ones to be used in diseases of a bilious origin. I shall take pleasure in recommending them not only to my patients, but the entire medical profession.
Yours truly, J. M. WISTAR, M. D.

From one of the leading retail druggists of West Virginia:

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Yours, F. M. CHALFANT.

We could fill several pages with certificates, &c., from prominent men throughout the country, but prefer to let the Pills in the future, as they have in the past, rest entirely on their own merit—knowing that wherever they are known their use will pass down from generation to generation.

GILPIN'S VEGETABLE LIVER PILLS are sold by all respectable Druggists and Country Store-keepers throughout the United States and Canada.

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Announce the introduction of a plan of ordering

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December 29th, 1877.

(M-F-4)

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LIGHT DRAUGHT,
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ALL THE
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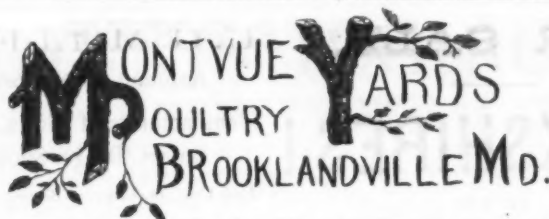
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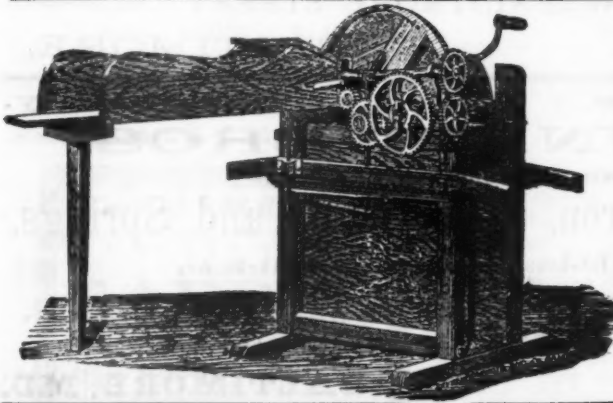
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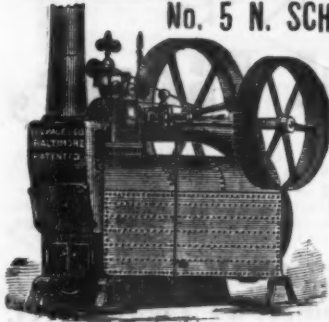
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Ladies' Lasting Kid Foxed, Extra Quality.....	2 00	Ladies' Morocco Balmorals, high cut, Extra Qual.....	1 75
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